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THE POTENTIAL FOR RESOURCE-BASED INDUSTRIAL DEVELOPMENT IN THE LEAST DEVELOPED COUNTRIES

No.7

NEPAL

Prepared by the
Division for Industrial Studies
Regional and Country Studies Branch

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PREFACE

Within the Work Programme of UNIDO, particular attention is given to the specific needs and requirements of the least developed countries in line with the calls by various international fora. In the New Delhi Declaration and Plan of Action [1/] several supportive measures were suggested for these countries, among them the provision of assistance to establish comprehensive inventories of their natural resources - raw materials and energy - and to prepare industrial surveys with the aim to upgrade and mobilize these resources in an effort to sustain endogenous industrial development. Similarly, the Paris Substantial New Programme of Action for the 1980s for the Least Developed Countries [2/] emphasized the importance of attaining an increased rate of growth in manufacturing as part of the objectives of greater economic diversification and rapid economic development.

UNIDO is committed to support the least developed countries in their efforts in building up an economy of sustained rapid industrial development based on full utilization of their resource potentials. To this end, the Regional and Country Studies Branch of the Division for Industrial Studies of UNIDO is directing a substantial part of its country-level study programme to assist individual least developed countries in analyzing their production structures and resources and their long-term prospects for industrial development. Through such joint analyses, a basis may be created for a systematic utilization of resources for development and the formulation of long-term strategies and policies.

1/ The New Delhi Declaration and Plan of Action on Industrialization of Developing Countries and International Co-operation for their Industrial Development was adopted by the Third General Conference of UNIDO, New Delhi, February 1980.

2/ The Substantial New Programme of Action for the 1980s for the Least Developed Countries was adopted by the United Nations Conference on the LDCs, Paris, September 1981.

The aim of this study on Nepal is to systematically examine the basis and prospects for long-term endogenous industrial development of the country and to review constraints and policies affecting these prospects. It is expected that the findings of the study will be servicing His Majesty's Government of Nepal as a point of reference in planning, policy-making and industrial promotion activities.

This study on Nepal has been prepared by the Regional and Country Studies Branch with the assistance of Professor Karsten Laursen, Institute of Economics, University of Aarhus, Denmark, as UNIDO consultant for the study work. Technical guidance was also provided by Mr. Curt F. Knepell, UNIDO consultant, as Metal/Engineering Industry Specialist. The study is based on a report prepared in 1983 under UNIDO subcontract by the Industrial Services Centre (ISC), Kathmandu. The ISC-study team was led by Mr. Vijaya Raj Sharma, Economist. Other members of the team were Mr. Sriram Raj Pande, Economist, Mr. Mukunda Ram Bhandary, Senior Engineer (metal/engineering subsector aspects), Mr. Shiva P. Devkota, Research Associate and Mr. Raghu N. Koirala, Research Associate.

A preliminary version of the study was reviewed at a seminar held in Kathmandu on 28 October 1983 in which senior government officials and representatives of Nepalese industry participated together with UNIDO staff and consultants. The comments and views expressed at the seminar are reflected in the present study report.

The views and opinions expressed in the study are those of the authors and do not necessarily reflect the views of the secretariat of UNIDO or those of His Majesty's Government of Nepal.

EXPLANATORY NOTE

(a) Currency and rate of exchange

The national currency is Nepal Rupees (NRs). Its average annual parity against the US dollar since 1970 has been:[1/]

1970-72	US $1	=	10.125 NRs.
1973	US $1	=	10.500 NRs.
1974	US $1	=	10.560 NRs.
1975	US $1	=	11.003 NRs.
1976-77	US $1	=	12.500 NRs.
1978	US $1	=	12.110 NRs.
1979-80	US $1	=	12.000 NRs.
1981	US $1	=	12.359 NRs.
1982	US $1	=	13.244 NRs.

On December 1982 the Nepalese rupee was devalued by 8.3 per cent against the US dollar, so the rate became NRs. 14.30 = US $1.

(b) List of abbreviations used

Fifth Plan	Fifth Development Plan 1975-80
Fourth Plan	Fourth Development Plan 1970-75
HMG/N	His Majesty's Government of Nepal
ISC	Industrial Services Centre, Kathmandu
NIDC	Nepal Industrial Development Corporation, Kathmandu
Sixth Plan	Sixth Development Plan 1981-86
TPC	Trade Promotion Centre, Kathmandu

1/ International Financial Statistics, Supplement on Exchange Rates, IMF.

NEPAL
FAR WESTERN
MID WESTERN
WESTERN
CENTRAL
EASTERN
C H I N A
I N D I A
BHERI
KARNALI

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INTRODUCTION

PURPOSE AND SCOPE OF STUDY

It is the purpose of this paper to analyze the industrial situation in the country and point out the options of an industrial policy aimed at utilizing the country's resources for industrial activity.

The study thus addresses itself to an examination of the potential for further industrialization in Nepal. The question is which are the long-term prospects for economically viable exploitation of the domestic resources. The main implication of the approach is that in order for Nepal to pursue an endogenous industrial development fully utilizing the factors which are relatively abundant in supply, it is necessary that these factors are known and described as carefully as possible.

Consequently, after a brief review of the current situation of the industrial sector provided in Chapter I, Chapter II presents such an inventory of Nepal's resources and their present use for industrial purposes. For obvious reasons it has not been possible to note each and every industrial project which might be feasible on the basis of these resources under present or alternative industrial policies. The chapter does, however, draw attention to a number of industrial projects, which seem to be fairly robust in relation to the policy environment.

It is argued throughout the study that the general economic climate is likely to be more important for the industrialization process than specific concessions given to industry. Therefore, the constraints which are viewed to be the most important on industrialization are also in some measure those which are most important on economic development in general. These constraints, which include the limited size of the domestic market, the landlocked geographical position of the country, lack of both physical and human infrastructure and investment capital, the balance-of-payments

situation, a certain inefficiency of the administrative machinery, and various problems connected with the proximity of India, are discussed at some length in Chapter III, in an industrial strategy context.

Chapter IV is devoted to an analysis of policies and prospects for industrialization. The industrial policies are looked upon in an integrated way, as a package, although it includes reference to certain specific policy areas. Against this background an analysis is given regarding prospects, in the context of resource-based industrial development, for various industries.

The final Chapter V contains brief concluding observations, including proposals for follow up action.

In Annexes A and B certain supplementary information is included, concerning the country's economy as a whole and concerning the institutional infrastructure for industry.

Chapter I

DEVELOPMENT OF NEPAL'S INDUSTRIAL SECTOR

This chapter attempts to provide a survey of industrial development in Nepal. Although it suffers from a number of statistical gaps, it may serve as a point of departure for the analysis, in subsequent chapters, of the growth potential of this small and hitherto relatively stagnant sector of the economy. Annex A provides background information on the general economic scene.

(a) The context

Nepal is one of the world's poorest countries. It has a very small area of cultivable land - given the pressure of population growth. Severe weather conditions further constrains the modest amount of farming which is carried out. In the recent drought even the Terai, the relatively fertile southern area of the country, suffered badly. If the nation's farmers - and that really means the overwhelming portion of the working population - face economic difficulties, so too do those involved in industry. The inputs they receive from farmers are subject to interruptions in supply and the products, in turn, face volatile markets. Exports are feasible for some commodities and processed items, but here the long and arduous journey to or through India - or to China - acts to limit the range of goods for which exporting is feasible. The fact that the output of many types of farm goods has fallen in recent years points to the difficulties facing agro-processors.

The high transport costs and the fact that most of the processed goods consumed are imported (from India), would suggest some scope for import substitution. But there are many difficulties in the way of expanding the Nepalese industrial base. First, and most important, is the fact that the Nepalese market is merely a small increment to the demand facing large-scale Indian producers, who are very probably able to exploit some economies of scale in their plants. Given the much smaller size of the Nepalese economy, certain cost disadvantages will inevitably face those producers involved in products exhibiting economies of scale.

Another constraint is that - as was mentioned above - the demand in Nepal is subject to significant fluctuations in cash purchasing power, due to the success of crops from year to year. Industrial activity is largely conducted in small units tied to the home or farm. There is thus only a small portion of the labour-force permanently tied to factory work, and most of the country's people move between occupations in a relatively fluid way. Notwithstanding these various constraints, the need to industrialize, albeit on a selective basis, is clearly recognized.

(b) Manufacturing production, value added and employment

Even given the low level of overall economic development in Nepal, its organized or modern manufacturing sector[1/] is very small. It accounts for only about 2.5 per cent of gross domestic product and provides employment for less than one per cent of the labour force. In comparison, the shares of manufacturing in GDP are 18 per cent in India, 17 per cent in Pakistan, 16 per cent in Sri Lanka and 8 per cent in Bangladesh. Even in other least developed countries like Burundi, Ethiopia or Upper Volta the shares are around 10 per cent.[2/]

The most recent figures pertaining to employment, production and value added appear in Tables 1 and 2. During the 1970s, manufacturing value added in Nepal's manufacturing (organized or modern sector only) increased at an average annual rate of some 4 per cent, which was only slightly above the rate of growth of GDP as a whole. Consequently, there has not been any significant increase in the share of industry in GDP over the last decade or so. During this period, labour productivity in industry as a whole increased by about 3 per cent per year, while employment rose by an average of one per cent. Given an increase of some 3 per cent per year in the total labour force, this means that a falling share found direct employment in industry.

1/ Industrial activity in Nepal can be thought of as taking place in two broad categories, the organized or modern sector (2.5 per cent of GDP) and the cottage and very small-scale industry sector (1.3 per cent of GDP), where the former is defined as firms employing 10 or more workers and/or using mechanical power. Virtually all statistics refer to the modern sector only.

2/ World Development Report 1983, World Bank.

Table 1. Industrial employment, gross output and value added by branches of manufacturing, 1976/77

	No. of establishments	Employment		Gross output		Value added	
		No.	(%)	Value NRs.'000	(%)	Value NRs.'000	(%)
Food, drinks, tobacco and allied	2,805	25,317	50.6	3,372,085	85.6	329,256	61.9
Textiles, wearing apparel and leather	121	3,820	7.0	74,431	1.9	27,305	5.1
Wood, paper and allied	325	5,105	10.2	131,859	3.3	37,996	7.1
Chemicals, pharmaceuticals and allied	26	1,129	2.3	22,450	0.6	10,223	1.9
Non-metallic mineral product	97	6,019	12.0	20,960	0.5	9,303	1.7
Metals fabrication	64	1,233	2.5	41,467	1.1	10,431	2.0
Jewelery, curios	6	151	0.3	4,966	0.1	4,483	0.3
Miscellaneous	84	7,340	14.6	171,737	6.9	103,385	19.4
Total	3,523	50,120	100.0	3,939,955	100.0	532,432	100.0

Note: Miscellaneous includes those activities involving not more than two establishments. Data on fruit processing, cigarettes and jute processing are included under this heading.

Source: Based on census data of Census of Manufacturing Establishments, in Nepal 1976/77. Central Bureau of Statistics, HMG/N, Kathmandu.

Just as the industrial sector as a whole has lacked dynamism, its composition by subsector has also been virtually static. Only textiles experienced much of an increase in share of total output during the 1970s. Available statistics on the production of the country's principal industries in volume terms show the limited growth of manufacturing during the 1970s (see Table 3).

Table 2. Value added by industry group, 1976/77

(In thousand NRs)

Oil and grain mill products	273,976
Fruit canning and bottling	73
Bakery products	12,586
Ice and ice cream	53
Sugar refineries	27,306
Animal feeds	349
Distilleries	3,879
Tea packing	777
Biri making	10,679
Cigarette factories	1,767
Yarn and textiles	19,716
Knitting mills	1,099
Carpets and rugs	2,521
Caps	455
Jute processing	48,022
Footwear, shoes	3,524
Saw mills	15,342
Furniture and stationery products, wooden	18,046
Furniture and stationery products, steel	4,729
Paper manufacturing	496
Printing press	4,112
Drugs and medicine	3,976
Soaps	718
Matches	5,529
Bricks and tiles	9,303
Metallic vessels	5,062
Repairing works	690
Jewellery and curios	4,483
Activities, n.e.c.	53,174
Total	532,432

Source: Central Bureau of Statistics, HMG/N, Kathmandu.

Table 3. Production of principal industries by volume, 1969-1980

Type of industry	Units	1969/70	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80
Sugar	'000 metric tons	16.2	12.0	11.0	16.4	26.5	27.2	14.2
Tea	'000 kg.	20	47	336	395	413	326	387
Biscuits	'000 kg.	n.a.	n.a.	n.a.	723	1,197	2,037	1,912
Cigarettes	Million	1,470	3,000	2,450	1,770	1,630	2,070	1,640
Bear	'000 liters	n.a.	68	816	630	788	1,181	1,311
Liquors	'000 liters	88	24	580	533	687	455	698
Soaps	'000 kg.	n.a.	891	970	1,855	1,317	1,121	1,174
Cotton textiles	'000 meters	2,354	n.a.	4,211	5,225	3,889	2,429	3,489
Synthetic textiles	'000 meters	n.a.	n.a.	n.a.	1,128	1,717	1,775	n.a.
Jute manufactures	'000 metric tons	10.5	12.0	16.0	16.8	16.3	15.5	14.8
Leather goods:								
(a) shoes	'000 pairs	42	70	59	54	59	56	70
(b) leather	Million pieces	n.a.	n.a.	623	1,096	1,256	1,320	n.a.
Plywood	'000 sq.feet	n.a.	55	607	1,720	1,835	1,809	n.a.
Straw board	'000 kg.	358	1,022	900	1,301	749	1,410	965
Matches	'000 gross	516	649	679	658	677	724	700
Cement	'000 metric tons	n.a.	n.a.	27.0	43.0	38.0	21.0	29.0
Brick and tile[a/]	Million pieces	23,500	26,000	25,000	23,700	20,500	12,400	33,800
Fertilizers	Metric tons	n.a.	441.0	576.0	446.0	423.0	569.0	287.0
Plastic goods	'000 kg.	n.a.	n.a.	39	46	44	75	69
Polythene pipes	'000 meters	n.a.	n.a.	n.a.	n.a.	185.0	575.0	n.a.
Iron goods	'000 metric tons	n.a.	n.a.	4.9	5.2	3.4	4.5	n.a.
Agricultural implements	'000 kg.	143	300	92	287	313	179	n.a.
Stainless steel utensils	'000 kg.	933	156	175	157	173	294	763

a/ Public sector only.

Source: Ministry of Finance and Department of Industry, HMG/N.

Some statistics on the cottage and very small-scale industry sector, which probably accounts for about one-third of all industrial value added, are shown in Table 4. These figures are dated but give an impression of the variegated nature of activity in this part of the economy. A lot of work here is carried out part-time and seasonally, and it is thought that as many as a million people are involved in some form of occasional work in this way. Output from these businesses and families is mainly consumed at home or is sold at nearby markets. In recent years, however, a few products, such as woollen carpets, handicrafts and handloom textiles, have made their way on to export markets. In 1977/78 it was estimated that some 750,000 cottage businesses absorbed 1,215,000 people, with output worth Rs. 713 million.[1/]

Table 4. Cottage and very small-scale industry. Estimated production and home consumption by product group, 1972-73

(In thousand NRs)

Industry group	Production (gross output)	Home consumption
Total	303,792	51,868
Woolen floor coverings, rugs and blankets	36,230	4,184
Woolen carpets	566	168
Woolen ropes	55	42
Cotton ropes	62,057	23
Ropes made of jute and other fibres	224	199
Load supporting materials made of rope or ropes for binding animals	11,973	4,114
Light mats	21,063	3,826
Thick mats	74	41
Floor covering made of jute and other fibres	26,134	359
Big baskets made of bamboo and reed	12,238	2,807
Small baskets made of bamboo and reed	3,548	471
Winnowers and sieves	1,353	72
Bamboo mats	6,975	1,115
Fans made of bamboo canes	141	124
Umbrellas made of bamboo and leaves	1,554	2,137
Woolen muffler, turban and girdle	755	235
Sweaters, jackets and wollen caps	2,215	699
Socks and gloves	166	40
Cotton caps	151	36
Bakkhu (woolen coats)	1,033	727

(continued)

1/ This estimate of activity may be compared to total output in the organized manufacturing sector of NRs 4 million (in 1976/77). See Table 1 above .

(Table 4 continued)

Industry group	Production (gross output)	Home consumption
Cotton shawl (chadder)	2,042	413
Bags and sacks	651	516
Fishing nets	957	930
Cotton fabrics	13,551	2,772
Cots	1,445	706
Benches	513	7
Tables	779	34
Chairs	738	58
Almirah	244	-
Stools	411	142
Miscellaneous wooden furniture	955	292
Spade, hoe and mattock	1,929	132
Sickles	750	35
Axes and adzes	544	22
Shares	436	4
Khukree	529	15
Miscellaneous tools and instruments of iron	358	24
Khukhree sheath	27	-
Earthen pots	3,032	103
Earthen vessels	3	-
Smoking clay pipes	60	2
Miscellaneous pottery products	1,954	11
Cooking pots, metallic	231	-
Frying pan, metallic	189	3
Pitchers and big cooking pots, metallic	416	-
Water pots, metallic	468	14
Miscellaneous metallic vessels	812	4
Ear and nasal ornaments, n.e.s.	365	17
Rings and bracelets	1,577	-
Miscellaneous golden ornaments	3,363	6
Silver ornaments	252	2
Miscellaneous ornaments,	45	17
Footwear	7,532	249
Tibetan shoes	84	13
Sandals and slippers	1,437	1,404
Rice, husked	4,658	4,444
Beaten rice	6,776	4,163
Parched rice	12,564	10,678
Oil	27,024	12
Sugar candy	116	-
Molasses and crude sugar	-	-
Biri	19	5
Miscellaneous	15,451	3,560

Source: Sample Survey of the Cottage and Small-scale Industries, 1972-73. Central Bureau of Statistics, HMG/N, Kathmandu.

(c) Capacity utilization

The limited growth performance of recent years in organized manufacturing is underscored by the low level of capacity utilization achieved. The discussion of capacity utilization in this section is based on a 1980/81 study by ISC, covering 181 establishments engaged in 58 manufacturing activities. Overall capacity utilization in the industries surveyed was estimated at only 41 per cent (see Table 5). Capacity utilization was highest (over 80 per cent) in enterprises producing beer, biscuits, PVC slippers, leather shoes, and soft drinks while enterprises producing agricultural tools, fertilizers, and stainless steel utensils, recorded less than 10 per cent capacity utilization. Utilization of capacity was a little over 50 per cent in three subsectors: food, beverages and tobacco; textiles, wearing apparel and fibres; and non-metallic minerals. Only 12 per cent of capacity was utilized in the metallic goods and electrical appliances subsector due principally to lack of demand for stainless steel utensils, for which production capacity accounts for over 80 per cent of the sub-sector capacity.

Table 5. Capacity utilization in selected manufacturing establishments, 1980/81

	No. of establishments	Capacity utilization (%)
Food and beverages	17	50.8
Textiles, wearing apparels, fibres	7	51.5
Wood, paper and allied	7	39.2
Chemicals and plastics	10	40.1
Non-metallic minerals	6	52.1
Metallic goods and electrical appliances	11	12.0
Total	58	41.1

Source: Industrial Review Report (selected industries) 1980/81. ISC, Kathmandu, 1982.

In general, the constraints on better utilization of capacity quoted in the study were the irregular and inadequate supply of raw materials and of electricity. Other important factors were competition from imported goods and insufficient working capital, which inhibits the adequate stocking of inputs.

The findings of the ISC study are generally corroborated by the information given in Table 6, which shows data for 1976 to 1980 gathered by the Department of Industry.

Table 6. Capacity utilization of selected industries,[a/] 1976/80

Industry	Unit	Capacity [b/] ('000 units)	Capacity utilization [c/] in percentage 1976/77	1977/78	1978/79	1979/80
Sugar	Tons	23	73	95	120	63
Cigarettes	Sticks	4,160,000	71	65	50	40
Tea	Kg.	468	58	62	54[d/]	83
Beer	Litres	1,200	25	66	98	109
Matches	Gross	1,320	56	58	55	53
Leather shoes	Pairs	108	71	76	52	65
Cotton textiles	Meters	24,242	37	30	14[d/]	14
Jute goods	Tons	22	78	78	71	67
Cement	Tons	n.a.	65	75	44	60
Bricks and tiles	Pieces	40,500	93	97	31	85

a/ Includes public corporations and registered private firms in the organized sector.

b/ Refers to 1979/80.

c/ Output expressed as a percentage of capacity.

d/ First nine months.

Source: Department of Industry, HMG/N, Kathmandu

(d) Industrial investment

Investment in the modern manufacturing sector during 1976/77 amounted to about NRs. 1,452 million. Nearly two-thirds of this gross investment took place in two subsectors, food, drinks and tobacco and textiles, wearing apparel and fibres (see Table 7). As noted above these subsectors run at above average capacity utilization, although it is still low in absolute terms.

Table 7. Sources of finance for investments in the (modern sector) manufacturing establishments, by subsectors, 1976/77

(In million NRs)

Subsector	Loan capital						Own capital	Total
	Total loans	Banking institutions	HMG/N	Individuals and private institutions	Foreign agencies	Others		
Food, drinks and tobacco	177.4 (23)	105.0	0.3	21.4	8.7	42.0	229.1	406.5 (28)
Wood, paper and allied	11.4 (3)	8.2	0.1	2.1	0.5	0.6	17.4	28.2 (2)
Textiles, wearing apprel and allied	97.6 (24)	14.5	50.9	30.3	0.8	1.1	418.5	518.1 (36)
Chemicals, parmaceuticals and allied	3.3 (1)	2.5	-	0.5	-	0.2	21.6	24.9 (2)
Non-metallic mineral products	2.4 (0.6)	1.4	-	0.3	0.6	0.2	13.2	15.7 (1)
Metals, fabrication	25.4 (6)	24.2	-	0.2	-	1.0	9.3	34.6 (2)
Jewelery and curios	1.2 (0.3)	0.1	-	1.0	-	0.2	0.1	1.3 (0)
Activities	93.6 (23)	67.8	15.5	4.2	1.1	5.5	330.2	424.4 (29)
Total	412.8	23.7	66.8	60.0	11.7	50.7	1,309.5	1,452.3

Note: Figures in parenthesis represent percentage shares of each subsector in total investment.

Source: Based on data of Census of Manufacturing Establishments, Nepal, 1976/77, Central Bureau of Statistics, HMG/N, Kathmandu.

About 28 per cent of the resources used for investment were obtained locally through outside loans, while 72 per cent was financed internally.

By international standards the ratio of outside to own financing is very low, and no doubt reflects the level of development of Nepal's capital market, as well as the cumbersome procedures for obtaining loans. The country's two commercial banks were the dominant lending institutions, followed by Nepal Industrial Development Corporation (NIDC) and the Central Bank. His Majesty's Government, individuals and private institutions were other important sources of industrial funds. Further details regarding industrial financing are given in Annex B.

(e) Public and private sector industries

His Majesty's Government has consistently tried to nurture a mixed economy. In the early stages of the country's industrial effort, particularly from the first Five Year Plan (1956-60) onwards, projects were allocated to the private and public sector by such criteria as management availability. In the Three Year Plan (1962-65) foreign-aided projects in the public sector were stressed, while the Fourth Plan (1970-75) once more stressed private sector growth. The major portion (about 90 per cent) of manufacturing value added is derived from private sector industries. Public sector investment has mainly gone in to larger enterprises in the textile, leather, jute, sugar, tea, cigarettes, cement and bricks and tiles industries. Investment in public manufacturing enterprises increased from NRs. 142 million in 1970/71 to NRs 269 million in 1974/75, a growth rate of around 17 per cent per annum although considerably less in real terms. In 1974/75 there were in all 23 public manufacturing enterprises with a total MVA of NRs. 54 million.[1/] Out of the 50,000 or so persons employed in the manufacturing sector, public enterprises employ about 5,600 persons.

(f) Spatial distribution of industry

Industry is concentrated in the Central Development Region and the Eastern Development Region. The two regions account for over 70 per cent of employment. The Central Development Region alone accounts for 50 per cent of

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1/ Profile of Public Enterprises in Nepal. Office of the Corporation Co-ordination Council, HMG/N, Kathmandu, June 1978.

establishments and 45 per cent of total employment (Table 8). This clustering of industry in these two regions is largely due to the proximity to raw materials and markets, the network of transport and communication, the availability of electricity supply and other essential infrastructure. Table 8 also indicates the dominance of the Terai in industry. Over 70 per cent of establishments and industrial employment is located there for much the same reasons as above. The Kathmandu Valley is the major industrial area in the hills. In order to foster the developmet of industrial activities in various parts of the country ISC-managed Industrial Districts (industrial estates) have been established in a number of locations - Patan, Balaju, Hetauda, Dharan, Pokhara, Butwal and Nepalgunj - although investors are in practice free to locate elsewhere if they prefer.

Table 8. Manufacturing employment by Development Regions, 1976/77

Development Region	Total No. of establishments	Employment No.
Eastern Development Region	745	15,561
Hills and mountains	45	1,054
Terai	700	14,507
Central Development Region	1,787	22,134
Hills and mountains	770	9,578
Terai	1,017	12,556
Western Development Region	665	7,864
Hills and mountains	225	2,814
Terai	444	5,050
Mid-Western Development Region	180	3,186
Hills and mountains	17	1,181
Terai	163	2,005
Far Western Development Region	151	1,375
Hills and mountains	29	490
Terai	122	885
Total	3,528	50,120
Hills and mountains	1,082	15,117
Terai	2,446	35,003

Source: Based on of Census of Manufacturing Establishments - 1976/77. Central Bureau of Statistics, HMG/N, Kathmandu.

(g) Foreign trade in manufactured products

Although industrial (non-food) exports still constitute only a very small share of GDP, this share has risen from about 0.5 per cent in the early 1970s to about 2 per cent at present. The implicit growth rate of industrial exports is slightly less than 20 per cent per year, which is a little above the average for the developing countries, although from a very low base.

Woolen carpets along with processed hides and skins and jute goods constitute the bulk of industrial exports other than to India. The present composition of these exports is given in Tables 9 and 11. Table 9 shows how food and live animals have grown in importance as exports to countries other than India, as have manufactured goods in general.

Exports to India, constituting about 30 per cent of Nepal's industrial exports, have quite a different composition, with processed food products particularly important until recently.(see Tables 9 and 10). Timber products have also been predominant until lately, with crude materials growing in importance.

On the import side there is some similarity between the composition of imports from India and imports from elsewhere, the main items being textiles, pharmaceuticals, metals fabrications and machinery and spare parts see Tables 12 and 13. Table 14 contains information regarding Nepal's imports in selected product groups in the chemicals, iron and steel and capital goods sectors. It is worth noting that the scattered statistical information at hand seems to show that imports of manufactures have grown somewhat more rapidly than industrial production.

Table 9. Exports by major commodity groups to overseas countries and to India, 1974-79

(In million NRs, current prices)

	To overseas countries					To India				
	1974/75	1975/76	1976/77	1977/78	1978/79	1974/75	1975/76	1976/77	1977/78	1978/79
Food and live animals	24.2	82.5	58.8	183.1	247.0	493.2	721.6	540.6	222.2	241.8
Tobacco and beverages	-	0.5	10.8	11.0	12.7	0.4	3.5	1.5	0.2	1.0
Crude materials, inedibles (except fuels)	38.6	90.1	170.7	189.7	129.4	174.7	136.1	207.1	251.5	362.3
Minieral fuels and lubricants	-	0.6	-	-	-	1.5	1.0	0.5	0.2	0.7
Animal and vegetable oils and fats	0.1	0.4	0.1	0.2	-	2.3	1.4	5.1	5.8	16.5
Chemicals and drugs	0.5	3.6	0.2	0.5	0.3	0.5	5.8	10.3	3.1	0.6
Manufactured goods calssified chiefly by materials (including textiles)	17.3	90.2	116.7	114.5	208.1	10.8	14.5	7.2	8.8	21.0
Machinery and transport equipment	1.9	2.2	1.3	0.1	1.6	0.2	1.4	0.3	2.6	1.3
Misc. manufactured articles	45.8	19.9	25.5	48.7	47.5	12.6	3.1	2.3	2.5	4.9

Source: Nepal Rastra Bank, Kathmandu.

Table 10. Overseas exports of industrial products, 1972-80

(In million NRs, current prices)

	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80
Rice	-	29.7	3.8	22.7[a/]	18.1[a/]	138.5	243.9	39.4
Jute goods	47.8	49.0	34.3	56.2	58.6	63.2	124.8	115.0
Hides and skins	11.6	11.9	6.0	24.9	55.1	76.3	128.9	211.6
Woolen goods	0.1	0.3	6.7	2.8	3.9	5.0	5.5	6.7
Nepalese paper and paper products	-	0.1	2.9	2.7	1.2	4.5	5.4	2.5
Woolen carpets	2.5	3.8	7.9	9.3	27.9	24.9	45.8	55.4
Readymade garments	0.1	1.0	1.3	2.0	4.0	5.7	8.5	7.8
Handicrafts	5.3	7.0	17.5	12.7	2.1	3.4	4.2	4.3

a/ All exported to the Tibetan Authonomous Region of China.

Source: Nepal Overseas Trade Statistics, 1979-80, TPC, and Nepal Rastra Bank, Kathmandu.

Table 11. Exports of selected commodities and industrial products to India, 1975-80

(In millions NRs, current prices)

	1975/76	1976/77	1977/78	1978/79	1979/80
Maize		1.4	4.7	4.8	11.7
Rice	495.4	343.0	46.5	13.8	
Mustard and linseeds	40.3	31.1	4.5	-	-
Herbs	2.8	6.3	6.5	4.8	5.0
Dried ginger	15.0	27.3	16.1	13.8	12.7
Ghee (classified butter)	60.5	35.8	33.2	41.5	17.0
Timber	54.1	103.4	146.7	138.9	109.9
Raw jute	-	-	-	2.1	n.a.
Jute cutting	-	-	-	2.9	n.a.
Jute goods	-	-	-	8.2	n.a.
Leather products	-	-	-	-	0.2

Source: 1975-79: Nepal Rastra Bank,
1979-80: Based on data from the Department of Customs, Ministry of Finance, HMG/N, Kathmandu.

Tabnle 12. Imports by major commodity groups from overseas countries and India, 1974-79

(In million NRs, current prices)

	From overseas countries					From India				
	1974/75	1975/76	1976/77	1977/78	1978/79	1974/75	1975/76	1976/77	1977/78	1978/79
Food and live animals	9.0	32.9	20.9	37.6	30.2	234.1	258.2	228.4	285.5	261.8
Tobacco and beverages	2.3	10.4	1.3	15.1	4.1	16.6	31.9	18.9	29.1	31.6
Crude materials, inedibles (except fuels)	17.2	57.6	1.5	10.3	20.0	46.7	31.1	34.8	42.8	41.4
Mineral fuels and lubricants	2.8	116.4	132.7	137.8	211.7	179.9	95.3	116.4	13.4	20.7
Animal and vegetable oils and fats	0.3	1.9	0.9	6.5	4.0	6.7	5.5	7.4	24.3	18.4
Chemicals and drugs	44.8	75.2	82.8	85.5	103.3	134.7	114.9	141.7	169.4	194.2
Manufactured goods classified chiefly by materials (including textiles)	84.4	136.4	160.9	268.9	468.3	425.1	409.5	499.8	550.3	616.5
Machinery and transport equipment	113.5	255.3	201.9	273.9	318.0	156.6	158.1	173.6	209.2	256.7
Misc. manufactured articles	53.2	63.0	53.4	76.3	139.4	144.9	105.4	92.5	124.7	135.6

Source: Nepal Rastra Bank, Kathmandu.

Table 13. Overseas imports of industrial products, 1972-80

(In million NRs, current prices)

	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80
Textiles	52.8	56.9	105.2	86.1	98.1	203.5	318.6	273.4
Readymade garments	1.9	4.9	12.2	10.9	9.7	6.6	11.8	23.5
Medicines (including medical equipment)	3.1	3.3	7.9	35.0	34.0	22.9	35.7	42.1
Cement	0.1	2.6	45.5	17.1	3.9	10.6	56.8	77.5
Fertilizers	-	4.2	8.4	16.1	3.1	70.9	74.3	86.2
Office equipment and stationwey	1.9	8.7	28.8	12.6	19.2	24.4	36.7	36.5
Iron rod, sheets and corrugated sheets	1.8	4.4	16.9	15.5	4.5	14.4	32.3	53.5
Mechineries and parts	8.7	10.9	50.3	56.2	76.9	87.6	128.2	160.1
Transportation equipment	11.3	24.4	23.7	36.0	34.6	60.0	79.6	77.7
Tractors and spare parts	2.7	2.5	8.9	11.4	6.3	10.0	23.5	10.2
Air craft's spare parts	4.7	17.1	9.2	19.9	18.7	85.2	49.5	138.1
Electrical goods	2.8	4.0	7.6	19.8	14.4	23.7	30.7	12.2
Radios, transisters, taperecorders	1.4	3.1	3.9	2.7	3.0	11.8	23.7	26.2
Telecommunications equipment	2.8	4.6	10.3	4.7	15.8	15.7	16.7	32.3
Scientific research equipment	2.3	2.6	4.6	6.1	6.8	14.1	17.0	6.5

Source: Nepal Overseas Trade Statistics, 1979-80, TPC, Kathmandu.

Table 14. Nepal's imports of chemicals, iron and steel, machinery and transport equipment product group, 1975 and 1980

('000 US $)

SITC	Product group	Imports 1975	Imports 1980
513	Inorganic chemicals	32	....
5131	Oxygen, nitrogen, etc.	32	...
514	Other inorganic chemicals	227	40
5149	Inorganic chemical products, n.e.s.	227	...
53	Dyeing and tanning, etc. materials	37	448
5321	Dyeing and tanning extracts, etc.	...	...
5321	Dyeing extracts	...	...
533	Pigments, paints, etc.	37	448
541	Medicinal and pharmaceutical products	579	3,403
55	Essential oils, etc.	1,314	1,069
553	Perfumery and cosmetics	109	...
554	Soaps, cleansing, etc. preps.	1,205	1,069
5541	Soaps	1,203	...
561	Fertilizers, manufactured	922	11,539
5611	Nitrogenous fertilizers	922	...
Total	Chemical industry	3,110	16,498
671	Pig iron, spiegeleisen, etc.	...	6,822
672	Ingots and forms	494	...
6729	Blanks for tubes and pipes	494	...
673	Bars, rods, angles, shapes, etc.	861	...
674	Universals, plates and sheets	...	14
678	Tubes, pipes and fittings	37	...
Total	Iron and steel industry	1,392	6,837
71	Non-electrical machinery	6,538	24,244
712	Agricultural machinery	979	...
7123	Milking machines, etc.	979	...
714	Office machines	...	4,384
719	Machinery and appliances, n.e.s.	5,559	19,860
7192	Pumps and centrifuges	9	...
7199	Parts and accessories, n.e.s.	5,550	...
72	Electrical machinery	2.43	21,869
724	Telecommunications apparatus	1,645	7,025
7242	Radio broadcast receivers	429	...
7249	Telecommunications equipment, n.e.s.	1,133	...
725	Domestic electrical equipment	...	14,622
729	Other electrical machinery	788	221
7291	Batteries and accumulators	34	...
7299	Electrical machinery, n.e.s.	754	...
73	Transport equipment	3,619	26,686
732	Road motor vehicles	2,542	10,099
7321	Passenger motor cars	1,595	...
7322	Buses (including trolleybuses)	641	...
7329	Motorcycles, etc. and their parts	306	...
733	Road vehicles, not motorized	65	15
7331	Bicycles, etc.	65	...
734	Aircraft	1,013	16,572
7341	Aircraft, heavier than air	1,013	...
Total	Machinery and transport equipment	12,590	72,798

Note: Three dots (...) indicate that data is not available or not separately reported.

Source: "Asian Industry in Figures: A Statistical Profile of Key Sectors in Selected ESCAP Countries", UNIDO/IS.390, 15 June 1983, prepared by the Statistics and Survey Unit, Division for Industrial Studies.

Chapter II

RESOURCES AND THEIR INDUSTRIAL UTILIZATION

The present chapter contains a survey of natural resources and their actual and planned utilization in industry in Nepal. The resources include agricultural and forestry resources as well as energy and mineral resources.

a) Agricultural resources and their industrial use

The Nepalese economy is basically agrarian, in so far as over 90 per cent of the work force is dependent on agriculture for a livelihood. In recent years, the performance of this sector has been poor. The value of agricultural output fell in real terms over the period 1974/75-1979/80, and the contribution of the agricultural sector to GDP declined from 72 per cent to 57 per cent during the period. This reduction in output is largely due to declining productivity. Two major causes of this decline are the rapidly increasing population pressures on limited arable land (to the point where population density on arable land has grown to 1,500 people per square kilometer) and the erosion of the top soil due to large-scale deforestation. If this interpretation of the development of agricultural production is correct, it means that the marginal productivity of labour in agriculture may be negative, if no supportive measures are taken[1/].

(i) Crop and fruit production

The major food grains cultivated in Nepal are paddy, maize, wheat, millet and barley, and the most important cash crops are sugar-cane, oil seeds, jute, tobacco, potatoes and tea. In 1979/80, the total output of these crops stood at 3,995 thousand metric tons and the acreage under crops stood at 2,459

1/ Careful analysis of this issue by ILO experts, however, concluded that "additional labour input, especially in the hills, can contribute significantly to output". See R. Islam, A.R. Khan and E. Lee, Employment and Development in Nepal, ILO, Geneva, 1982.

thousand hectares (see Tables 15 and 16). It is clear that food grain production has fallen quite drastically in recent years, whereas the production of cash crops has increased. The former reflects a serious drop in yield rates from 1.75 tons/ha to 1.45 tons/ha. For comparison it might be mentioned that the corresponding rates are 1.21 in India, 1.9 in Bangladesh and 1.5 in Pakistan.[1/] The increase in cash crops production largely reflects an increase in the area under cultivation.

Between 1980/81 and 1984/85, food grain output is targeted to increase by 15 per cent or at an annual rate of 2.8 per cent. Wheat output is expected to increase by 26 per cent during the period, paddy by 140 per cent, maize by 12 per cent, barley by 13 per cent and millet by 8 per cent. These increases are assumed to be possible through increased agricultural productivity resulting from programmes to expand irrigation, supply of HYV seeds and fertilizers, agricultural extension services, and credit.

The output of cash crops is planned to be increased by 3.9 per cent per annum during the Sixth Plan period, 1981-86. The targets are expected to be largely realized through improvements in productivity resulting from specific programmes. Sugar-cane output is targeted to increase by 257,000 tons during the plan period, jute by 17,000 tons, oil seeds by 9,000 tons, tobacco by 3,000 tons, cotton by 2,240 tons, and tea by 1,000 tons.

Tea is cultivated in four public sector plantations and six private sector plantations in the hills and Terai areas of the Eastern Development Region, in an area of about 1,600 hectares. Seven tea processing units in both the private and public sectors are operating. Total production of tea amounted to 550 tons in 1980/81 against an annual capacity of 950 tons. In the same year more than NRs. 1.9 million worth of tea was imported, mainly from India. Cultivation and processing have good prospects in Nepal for meeting domestic needs and for exports to the world market. At present, domestic production satisfies about 25 per cent of the total consumption estimated at about 1,900 tons per annum. By 1990/91, the demand for tea is expected to have increased to 3,900 tons.

1/ FAO Production Yearbook, Vol. 35. FAO, 1981

Table 15. Production of major crops 1975/76 - 1979/80

(In metric tons)

	1974/75	1979/80
Food grain		
Paddy	2,452,268	2,059,930
Maize	826,651	553,760
Wheat	330,815	439,990
Millet	139,875	119,340
Barley	25,599	23,290
	3,775,208	3,196,310
Cash crops		
Potato	307,483	278,400
Oil seeds	65,852	62,870
Jute	41,350	61,500
Sugarcane	251,425	384,370
Tobacco	4,791	5,500
	670,901	798,640

Source: The Sixth Plan, Part I (Nepali Version), National Planning Commission, HMG/N, Kathmandu, 1981.

Table 16. Cropped area under major crops, 1975/76 - 1979/80

(In hectares)

	1974/75	1979/80
Food grain		
Paddy	1,249,853	1,254,240
Maize	458,027	432,340
Wheat	290,823	366,860
Millet	125,009	122,810
Barley	27,530	26,020
	2,151,332	2,202,270
Cash crops		
Potato	53,746	51,330
Oil seeds	111,996	118,130
Jute	34,218	56,700
Sugarcane	15,200	23,120
Tobacco	6,716	7,550
	221,876	256,830

Source: Ibid.

Cotton cultivation in the country is in its infancy. Results of test production of cotton in the Terai part of the Mid-Western Development Region have been positive, and commercial farming of cotton has begun, although in 1979/80, only 200 ha were under cotton cultivation. During the Sixth Plan, output of cotton is targeted to increase from 60 tons in 1979/80 to 2,300 tons in 1984/85 mainly through an expansion of cultivated area. This cotton crop is expected to meet the requirements of the public sector textile plant at Hetauda.

The major fruits produced in the country are mandarins, bananas, pineapple, apple and mango. The production of fruits such as mango, banana, guava and litchi is concentrated in altitudes below 1,000 meters, i.e. the tropical Terai zone. Citrus fruits such as oranges, lime and lemon are cultivated in the sub-tropical zone, i.e. the mid-hills at altitudes ranging between 1,000-1,500 meters. Peach, pear and plums are grown between 1,200-2,000 meters and apples above 1,700 meters elevation.

A large proportion of the fruits is consumed by those who grow them, with any surplus being consumed in domestic markets or exported to India. Only in a few areas are fruits cultivated on a commercial scale. On the whole, most fruits need to be imported to meet domestic needs.

Statistics on the production of various fruits in the country are scanty. According to one estimate, the production of oranges, bananas, and pineapple amounted to 37,150 tons in 1980/81.[1/] In terms of production, banana was the most dominant (25,000 tons). Most bananas are grown in homestead gardens. Orange production in the country was estimated at about 11,500 tons.

The cultivation of oranges on a commercial scale is concentrated in Dhankuta, Tehrathum, Bhojpur, Sankhuwasabha, Dhadig and Gorkha districts. The production of pineapple is estimated at about 650 tons, and is concentrated in the Terai districts of Chitwan, Morang and Jhapa. In addition to these fruits, apples are also grown in many mountain districts. Apple output in the four major areas - Jumla, Mustang, Sindhupalchok and Solukhumbu - is estimated

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1/ High Value Cash Crop Report, Vol.II. Agricultural Project Services Centre, Kathmandu, 1982.

at about 2,100 tons per annum. Jumla alone accounts for half of this apple output.

(ii) Crop and fruit based industries

Rice mills: The rice sector is characterized by traditional technology with an overwhelming use of ongloberg steel hullers. Rice milling capacity exceeds the availability of paddy, which is 1,520,000 tons (after deduction for post-harvest losses and seeds) in the Terai belt, which is the rice bowl of the country. Modern technology accounts for less than 20 per cent of capacity. In 1977/78, there were approximately 2,300 rice milling units, 84 of them sheller mills and the rest hullers. Total processing capacity was estimated at 1,650,000 tons of paddy annually in 1977/78, out of which the capacity of shellers was 263,000 tons (a mere 16 per cent).[1/] Until recently, Nepal exported small quantities of rice. Exports of rice in 1978/79 amounted to 59,000 tons. However, exports of rice have been stopped because of the scarcity of food grains in the country.

If the rice milling technology were modernized, at least five per cent higher recovery of rice could be realized from the same amount of paddy. The present practice of levying excise duty on the amount of rice produced inhibits modernization, since a sheller mill has to pay a higher duty than a huller on the same amount of paddy milled, due to more rice recovery for a given input.

Oil expelling and to some extent wheat grinding are usually done under one roof along with rice milling. The edible oil expelling capacity in 1980/81 was 28,000 tons per annum. About 85,000 tons of oil seeds are required for operation at full capacity. This is more than Nepal's present production of oil seeds, which averaged 72,000 tons per year between 1974/75 and 1979/80.

1/ Rice milling units: 84 shellers with total annual capacity of 263,000tons
527 big hullers (25 bhp and more) with total annual capacity of 559,000 tons
1,711 small hullers (below 25 bhp) with total annual capacity of 832,000 tons
Source: Industrial Sectoral Plan Study, Vol.II.A. ISC, Kathmandu, 1980.

Solvent oil extraction: Besides mechanical expelling of oil seeds, solvent oil is extracted by three plants in the country. These plants extract oil from rice bran and non-edible oil seeds like salseeds. The production capacity is 2,700 tons of oil per year (1980/81). Production was 2,600 tons in 1979/80 but only 960 tons in 1980/81. Rice bran is made available from sheller rice mills, whose annual availability is estimated at 18,000 tons approximately if all sheller mills run at full capacity. The bulk of the output of solvent oil is exported to India.

Maize products: The national food balance position shows a deficit in maize output in the hills and the mountain regions. However, the Terai region has a surplus of maize and a significant amount (1,500 tons in 1980/81) is exported to India without any processing.

Starch and glucose: The domestic demand for starch and glucose in 1990/91 is projected at about 2,100 tons and 400 tons respectively. This domestic demand alone is, however, not sufficient to support even a small unit with capacity of 2,000 tons of starch and 1,000 tons of glucose. (A plant of this size would require about 5,000 tons of maize per annum.[1/]) India already exports these items and Bangladesh is setting up plants to meet its needs.

Malt: Malt is used in the production of beer and cereal foods such as bournvita, horlicks and biscuits. A preliminary study by ISC showed that a malt industry was not feasible due to the low level of domestic demand. The study estimated beer demand in Nepal at 1.05 million litres in 1980/81 whereas the actual consumption subsequently recorded was 1.43 million litres, far exceeding the earlier estimate. About 200 tons of malt is required to produce 1.43 million litres of beer.[2/] Reassessment of the viability of a malt industry may thus be worthwhile.

1/ Feasibility Study Report on Starch and Glucose (updating). ISC, Kathmandu, 1981

2/ Industrial Sectoral Plan Study (1980/81 - 1990/91), Vol.II.A. ISC, Kathmandu, 1980. Feasibility Study Report on Malt Plant. ISC, Kathmandu, 1981.

Vegetable ghee: A vegetable ghee industry has recently started operating with a processing capacity of 5,000 tons per annum. It uses groundnuts as raw material and due to inadequate local supply, the bulk of groundnuts is currently being imported. This ghee is used for cooking purposes.

Flour (maida) mills: Seven medium-scale units are operating with annual milling capacity of 41,000 tons of maida. Actual output was 16,000 tons in 1979/80 and 20,400 tons in 1980/81. The wheat requirement of these units amounts to 64,000 tons at full capacity operation. In 1979/80, about 7,000 tons of wheat flour was exported to India.

Bakeries: There are seven bakery units with a capacity of 5,600 tons per year. These units produced 3,200 tons of bakery products in 1979/80 and 4,100 tons in 1980/81. Their flour requirements are met largely from domestic sources.

Biscuits and confectionery: Three units manufacture both biscuits and confectionery, and two units produce confectionery only. Total annual capacity is 2,500 tons of biscuits and 1,200 tons of toffees. The production of biscuits is about 2,400 tons and of confectionery 600 tons per annum.

Noodles: There are about 30 cottage-scale noodle making units in different parts of the country with a total production capacity of 450 tons per year. A medium-scale unit to produce instant noodles with a capacity of 1,275 kg per day or about 300 tons per year at 80 per cent capacity utilization has recently started operating.

Ginger processing: At present, ginger is being exported in raw form and sun dried. It is estimated that 3,000 tons of dried ginger is available for export.[1/] One plant with a capacity of 5,400 kg of ginger oil per year has been in operation for a few years. About 225 tons of dry ginger is required by the plant for operation at full capacity. The supply of ginger comes from the western hills. In addition, the Government has plans to promote, in the near future, a plant with a production capacity of 1.5 tons of ginger oil and 13 tons of oleoresin. Because a significant amount of ginger would still be

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1/ Source: Trade Promotion Centre, Kathmandu

available for processing even after the establishment of the second plant, the possibilities of setting up additional units need to be explored.

Sugar and khandsari: There are three white crystal sugar producing units with total annual capacity of 24,000 tons. Actual production during 1979/80 and 1980/81 has been around 14,000 tons and 12,000 tons respectively. A new public sector unit is under construction with a capacity of 10,000 tons per year. There are eight other units producing khandsari (brown sugar) using open pan boiling technology. Their total annual capacity is 2,000 tons. Actual production was 530 tons in 1979/80 and 800 tons in 1980/81. Sugar and khandsari units together can produce 12,000 tons of molasses and 72,000 tons of bagasse per year at full capacity operation. Almost all bagasse is consumed as a fuel by the sugar mills themselves. The total requirement of sugarcane by sugar and khandsari units at full capacity, inclusive of the sugar mill under construction, is about 400 thousand tons. Sugarcane output per year averaged 383 thousand tons between 1977/78 and 1979/80. The existing production capacity of the sugar industry, including the new plant under construction, is thus 34,000 tons, whereas the demand is expected to reach 40,000 tons by the end of 1985/86 and 72,000 tons in 1990/91. On the whole, the present output of sugarcane would just be adequate to meet the needs of the existing mills and the one under construction. The sugarcane output in Tauthat district of the Central Development Region is, however being exported to mills across the border in India because of the absence of a domestic mill within economic distance. A study by ISC has indicated the feasibility of establishing a plant in the area.[1/]

Processed fruits: There are ten fruit processing units, eight of them cottage scale, with a total annual capacity of about 400 tons of fruit products. However, capacity utilization was only around 61 per cent in 1980/81, with production of 245 tons. Besides these units, a unit is under construction at Biratnagar with a capacity of 1,600 tons of fruit products basically for export. With Japanese aid another unit is proposed at Sarlahifor 1985/86, with a planned capacity of 420 tons of processed fruits. The poor performance of the existing domestic industry is primarily attributed to inadequate fruit supply and the poor quality of domestic products vis à vis imports. But the fruits grown in hills and mountains also fail to find

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1/ Feasibility Study Report on Sugar (updating). ISC, Kathmandu, 1981

markets because of lack of transport infrastructure and the high cost of transportation to urban areas. The recently announced intention of the government to subsidize transport in such cases may induce more processing of fruit from remote areas.

Apple processing: Apples are grown in abundance at Jumla, a remote mountain district in the Mid-Western Development Region. Domestically processed apples in Jumla seem capable of competing with imported products and an apple processing plant at Jumla is reported to be feasible.[1/] Dried fruit is not consumed in Nepal, but if consumption could be promoted or export markets found, Jumla may offer further potential for dried apple processing.

Orange processing: The sweet oranges from the Sindhuli and Ramechhap districts in the Eastern Development Region are of good quality. Accordingly, the Government has launched a special programme to produce 21,000 tons of sweet oranges per year by the end of 1986/87. If export markets for sweet orange concentrate, mandarin concentrate, and tomato concentrate can be found, a plant at Dhalkebar in Dhanusha district may be possible. (See further the specific project discussion in Chapter IV.)

Liquor: Seven distilleries produced 0.9 million litres in 1979/80 and 1.08 million litres in 1980/81 against total annual capacity of 1.7 million litres. These distilleries use molasses and some of them import spirit directly from India.

Rectified spirit: One unit with a capacity of producing 1,000 gallons per day started operating last year and produced only 51,500 gallons in 1982/82. It is reported to face marketing problems due to high excise duties making the product costlier than was originally foreseen.

Beer: Until recently only one beer brewery existed in the country. The unit was running in excess of its rated capacity of 1.2 million litres producing 1.3 million litres in 1979/80 and 1.4 million litres in 1980/81. In late 1982, another unit with annual capacity of 2.9 million litres started operating. The capacity of the first plant has also been expanded to 2.7

1/ Feasibility Study Report on Fruit Processing at Jumla (Draft Report). ISC, Kathmandu, 1982.

million litres per annum. Total beer production capacity has thus been expanded to 5.6 million litres per year.

Soft drinks: There are three units with a capacity of 2.5 million litres. These units produced 1.2 million litres in 1979/80 and 2.1 million litres in 1980/81.

Cigarettes: Three cigarette units produced 1,810 million sticks in 1979/80 and 2,010 million sticks in 1980/81 against total capacity of 4,200 million sticks per annum. A part of the tobacco requirement is imported for blending purposes.

Bidi: Bidi is very popular among people of lower income brackets as a substitute for cigarettes. There are around 75 units operating now. Since such units do not require any machinery or tools, production could be increased by simply employing more labour.

Cotton textiles: The potential for expanding cotton cultivation has been proved through almost a decade of research. Considering the huge market for textiles in Nepal (about 200 million meters), an integrated approach to developing the country's cotton farming and textile industry is desirable. The domestic production of textiles is a meagre 50 million meters. There are in the country eight textile factories, including the Hetauda Textile Industries, and about 70,000 units producing handloom cloth.

Jute products: In the fiscal year 1982-83 Nepal earned about NRs. 120 million worth of foreign exchange from jute and jute goods exports. The jute industry benefits approximately 350,000 people. The country's jute production has been around 55-75 tons per year with a quarter of the production used by local jute mills and the rest exported raw, mainly to India. However, because of the pricing policy of the public sector jute-trading corporation and a failure to provide adequate loans and other support, jute farmers have in certain areas gradually switched to paddy and other cash-crop production. The shifting of the farmers from jute cultivation to other crops now gravely threatens some six existing medium-sized jute plants in the Biratnagar and Jhapa districts. Because of the low production of jute those plants have now had to import 15,000 tons of raw jute from India against Nepal's exports of

25-30,000 tons in 1983.[1/] A recent study undertaken by ISC has shown that a jute mill with a capacity of 10,700 tons of sacking and 400 tons of mats is economically feasible[2/] (provided the trend of diminishing jute production can be reversed).

Strawboard: Strawboard is manufactured from rice straw. The only unit in the country produced 930 tons in 1979/80 against its capacity of 1,500 tons. The bulk of the output (95 per cent in 1979/80) is exported to India.

Animal feed: The six animal feed units in the country together have capacity of 25,500 tons of feed annually. Actual output during 1980/81 was 13,400 tons. The domestic demand for animal feed is gradually increasing, especially in government livestock farms. According to an estimate, about 35,000 tons will be demanded in 1984/85. Preliminary studies have indicated that three additional plants, one each at Janakpur, Pokhara and Nepalgunj, may be feasible because of the needs of the livestock development projects launched in those areas.[3/]

(iii) Animal resources

Livestock raising is an integral part of the agricultural economy of Nepal. Data relating to the major types of animals in the country are summarized in Table 17. The table indicates the dominance of cattle on the total livestock population. Water buffaloes, goats, and sheep also feature strongly. Total bovine population is estimated at 9,550 thousand heads. Poultry is also important while pigs comprise a small fraction of the livestock population. Minor categories of livestock are chaurie, yak, horses and mules. The bovines are kept mainly for draft purposes and milk production while the small stock is meant for meat and wool.

1/ Far Eastern Economic Review, 19 April 1984.

2/ Supplementary Study on the Feasibility Report for Setting up a Jute Mill in Nepal by Bangladesh Jute Mill Corporation, ISC, Kathmandu, 1983.

3/ Industrial Sectoral Plan Study (1980/81-1990/91), Vol.II.A. ISC, Kathmandu, 1980

A high proportion of the livestock population (over 70 per cent of buffalo, goats, and sheep and over 65 per cent of cattle) is found in the hills. This reflects the fact that the mountains and hills occupy two-thirds of the total land area and that arable land is limited to only about 21 per cent of the land area. Above an altitude of 2,500 metres, livestock keeping is the major economic activity.

The rapidly dwindling availability of pasture lands and fodder trees are two critical constraints to the development of livestock resources. These problems will need to be effectively tackled before any significant programme for the development of this potential resource can be successfully launched.

Table 17. Livestock statistics of Nepal, 1979

Type	Number ('000)
Cattle	6,690
Buffalo	2,860
Sheep	2,100
Goats	2,600
Pigs	400
Poultry	21,200

Source: Livestock Development Project, (Draft Report), Asian Development Bank, Manila, 1980.

(iv) Animal-based industries

Meat and meat products: There is only one modern slaughter-house with a capacity of 1,800 tons of meat and meat products from buffalo, pig and chicken. Its output amounted, however, to only about 50 tons in 1980/81. This poor performance is largely due to the fact that consumers prefer to make their purchases of meat products from local butcher shops.

Carcass products: Carcasses could be utilized to produce bonemeal, meatmeal and tallow. The requirements of bonemeal and meatmeal for the feed industry are estimated at about 530 tons and 420 tons respectively in 1985/86. An additional 310 tons of bonemeal is expected to be required for use in fertilizers. The potential demand for tallow is 300 tons. However, at present, two existing units are producing only 25 tons of meatmeal and 335

tons of bonemeal per year. It has therefore been decided to establish two plants each with the capacity of 500 MT per annum, at Itahari and Nepalgunj.[1/]

Milk and milk products: There are five dairy units, four in the public sector and one in the private sector. Pasteurized milk is the major dairy product. Total pasteurizing capacity stands at 116,000 litres of milk per day. However, because of supply constraints, output in 1981/82 stood at only 57,000 litres of milk per day. Curd, cheese, butter and ice cream are also produced in small quantities. The export potentials for high quality cheese (if this can be developed) might be worth looking closely into.

Skimmed milk powder: Demand for skimmed milk powder (SMP) is rapidly increasing especially in urban areas where fresh milk is in short supply. The demand for SMP was estimated at 1,200 tons in 1980/81 and is projected to increase to over 1,500 tons by 1986/87. A recent study by ISC had indicated the feasibility of establishing a plant with a capacity to produce 575 tons of SMP and 530 tons of butter per year at Janakpur in the Central Development Region.[2/] The plant would require 20,000 litres of fresh milk per day. The milk is to be collected from an area covering five Terai districts. The plant may also be able to operate a second shift at a later stage when more milk becomes available as a result of the livestock development project launched in the area with the assistance of the Asian Development Bank.

Refined ghee: Two units with total capacity of about 3,000 tons refined animal ghee. But production in 1980/81 only was 730 tons, largely because of the non-availability of ghee for refining.

Tanned leather: There are nine tanneries which process hides and skins in the country. Seven of the tanneries process goat skins while hides are

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1/ Feasibility Study Report on Carcass Utilization Plant. ISC, Kathmandu, 1981

2/ Study Report on Skimmed Milk Powder Plant at Janakpur (Draft Report). ISC, Kathmandu, March 1983. A project proposal for a plant of a capacity of 574 tons skim milk powder and 529 tons of butter per year costing approx. US $2.4 million has been put forward at the Nepal Aid Group meeting in Paris in December 1983 and the Nepal Investment Promotion Meeting scheduled for June 1984 in Kathmandu.

processed in two units. The installed goatskin processing capacity is 22,000 pieces per day or 6.6 million pieces per annum. Hide processing capacity has increased to 1,450 pieces per day or about 435,000 pieces per year since 1981/82 when a large-scale factory went into production. Virtually all the processed goat skins and over half of the processed hides are exported overseas. Because of the world recession, the domestic leather industry has been hard hit in recent years and as a result most tanneries are operating at low levels of capacity utilization. Exports of hides and skins have declined from NRs. 212 million in 1979/80 to NRs 97 million in 1980/81, NRs 94 million in 1981/82 and NRs 85 million in 1982/83. On the assumption that the market will recover, a study by ISC has indicated the feasibility of establishing a wet-blue tannery unit at Nepalgunj. The proposed processing capacity of the plant is 525 goat skins, 225 buffalo hides and 125 cattle hides per day.[1/]

A vegetable tanning unit with a capacity of 50 pieces of buffalo raw hides into sole leather has also been found to be feasible. The tentative suggested location is either Butwal or Itahari.[2/] The finished products of the unit could either be consumed internally or exported abroad.

It may also be desirable to encourage existing tanneries to expand into crust and finished leather manufacture. At least four of the existing tanneries have sufficient production of wet-blue skins to provide inputs for an expansion into crust and finished leather processing.

Leather shoes: The total demand for leather shoes in 1980/81 was estimated at 1.2 million pairs and is expected to increase to 1.4 million pairs by 1986/87. In comparison, total installed capacity in the existing four modern sector shoe establishments is only 125,000 pairs per annum and the production of the four units in 1979/80 was 76,000 pairs and in 1980/81 104,000 pairs. Capacity utilization in the industry is thus unsatisfactory. Consumers seem to prefer imported shoes, however, on grounds of better quality and design. Shoes made by local cobbler units are popular. However, even

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1/ Feasibility Study Report on Leather Tanning Unit at Nepalgunj. ISC Kathmandu, July 1982

2/ Feasibility Study Report on Buffalo Raw Hides through Vegetable Tanning Technology in Nepal. ISC, Kathmandu, 1980.

under existing conditions, a plant with a capacity of 150,000 pairs of shoes per annum on single shift basis has been found feasible at Hetauda.[1/]

Industrial gloves and aprons: There is at present no production of any leather-based industrial clothing in Nepal. Although demand for these products does not exist in the domestic market, there is worldwide demand by industry for protective gloves and aprons. It might be appropriate to study the potential for an export-based industrial glove and apron manufacturing unit after 1984/85. The unit might produce 200 pairs of chrome leather gloves, 50 leather aprons, and 50 leather aprons with bibs per day. It should preferably be located close to one of the two hide tanneries, either in Hetauda or in Kathmandu.[2/]

Woollen goods: There is only one unit producing coarse woollen yarn. It has capacity of 65 tons of yarn per annum. Production by the unit stood at about 40 tons in 1979/80. In addition, there are numerous woollen garments and carpet units in the cottage sector, most of them run by households. Total production of such units was estimated at NRs. 110 million in 1977/78.

(b) Forest resources and their industrial use

(i) Forest resources

Forests represent a vital renewable resource in Nepal. The country's forests supply timber, fodder and medicinal herbs for domestic consumption and exports. The supply of forest resources has been rapidly dwindling over the years because of increased pressure of the population on land and logging operations. The forest cover declined from an estimated 45 per cent of total land area in 1964 to 34 per cent in 1974 and to 20 per cent in 1977.

Out of an estimated 28 million hectares of forests in 1979, 42 per cent of the area lies in the Terai and 58 per cent in the hills. The total growing stock was estimated at 158 million cubic metres, inclusive of both commercial

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1/ Feasibility Study Report on Leather Shoe Industry at Hetauda. ISC, Kathmandu, 1982

2/ Leather and Leather Products Sub-sector Study. ISC, Kathmandu, 1981

and non-commercial forests. This stock is estimated to yield about 7.2 million cubic metres of wood annually inclusive of both timber and fuelwood species. Fuelwood is estimated to account for 5 million cubic metres of the annual yield and industrial roundwood for 2.2 million cubic metres (Table 18).

Table 18. Forest coverage, total growing and annual yield, 1977

Region	Forest area ('000 ha)	(%)	Growing stock (million cu. metre)	Sustainable yield/annum (million cu.metre)
Terai	1,182.2	42	80.4	3.1
Hills	1,602.7	58	77.6	4.1
	2,784.9	100	158.0	7.2

Source: Country Paper on Nepal. UN Conference on New and Renewable Sources of Energy, 1981.

The forests of the Terai are commercially more important because of the size and quality of the wood and the accessibility of the region. Sal, Terai hardwood, Khair sissoo, Khard wood, Chir pine, oak and bamboo are the species available for commercial use. The percentage of the forest area in the hills and Terai accounted for by each of the above spieces in 1974 is given in Table 19.

Table 19. Species of trees and percentage of forest area in the hills and the Terai, 1974

Species	Terai (in per cent)	Hills (in per cent)
Sal	46.2	20.7
Terai hardwood	49.0	8.7
Khair sissoo	3.8	0.2
Khard wood	0.3	21.3
Chen pine	0.6	16.7
Oak, bamboo	0.1	-

Source: Forest Resource Survey - 1974. Department of Forestry, HMG/N, as reprinted in Supply Survey Studies Project (Vol.II), TPC, Kathmandu, 1980.

The potential for any significant industrial utilization of the forest resources is very limited in the immediate future. A thorough assessment of the existing stock of forest resources and the sustainable supply of industrial roundwood fuelwood, and other forest resources need to be made and adequate afforestation measures successfully launched before the country's forests can once again serve as an important renewable resource.

There are strong indications of promising vegetable tanning materials and fibrous plants like hemp, allo, ketuki, lokta, etc. A survey of these specific plants need not wait for a full forest resource survey. Moreover, there are a few products like rope, handmade paper, etc. already made of fibrous plants in rural areas for household requirements. Some technical research on appropriate technologies for processing them to produce marketable products might be desirable considering its potential impact on hills and rural areas.

(ii) Forest-based industries

Sawn timber: Hundreds of small and cottage scale saw mills are scattered around the country. However, one large public sector company with mills located in various parts of the country dominates the scene. The total capacity of these public sector mills is 3.6 million cubic feet (cu.ft.) of sawn timber per annum, but output was only 1.7 million cu. ft., in 1979/80 and 1.3 million cu.ft in 1980/81. In 1979/80, sawn timber worth over NRs. 60 million was exported. Such exports have now been stopped because of the increasing scarcity of sustainable supply of timber within the country.

Seasoned wood: Two units are already in operation with installed capacity of 55,000 cu.ft. per year. The production was only 5,000 cu.ft. and 6,000 cu.ft. in 1979/80 and 1980/81 respectively.

Plywood: Two plywood units with total capacity of 4.3 million sq. ft. are in operation. The output of plywood was 2.1 million sq.ft. in 1979/80 and 1.9 million sq.ft. in 1980/81. The poor performance is largely due to the short supply of wood and also competition from Indian products.

Furniture and joinery: Numerous cottage scale furniture units are operating around the country. The total production of various types of

furniture in 1979/80 was estimated to be worth NRs. 38.5 million and joinery worth a further NRs 95.2 million. The supply of wood is a major production bottleneck. Still, it may be possible to promote a few furniture projects in urban areas on a limited scale, despite the shortage of wood, in order to meet increasing domestic demand as far as possible.

Wooden parquet blocks: Only one wooden parquet unit with a production capacity of 864,000 sq.ft. per year is in operation. Production amounted to about 177,000 sq.ft. in 1979/80 and 220,000 sq.ft. in 1980/81. In 1979/80, approximately 60 per cent of its output was exported. A study has indicated the viability of another wooden parquet plant with a capacity of 500m^2 per day at Nepalgunj in the Mid-Western Development Region oriented towards export markets[1/]. Considering that most of the output from the country's existing plant is exported, external demand may not be a major constraint.

Matches: Matches are being produced in seven establishments in the country. Total capacity stands at 281 million boxes per year but utilization of this capacity is very poor because of bottlenecks in the supply of match splinters and chemicals. The wood for match splinters is available in the forests of Terai. In 1980, only about 122 million boxes of matches were produced, while the demand is estimated to be over 200 million boxes. Matches are imported only when domestic supply falls short of demand. Quality of the local matches is, however, rather poor.[2/]

Paper: There are no operating paper plants as of yet, except for numerous handmade paper units. However, three units for manufacturing writing paper are licensed and are at different stages of construction. The combined capacity of these three units will be 55 tons per day or 16,500 tons per annum. In addition to these, another plant with a capacity of 100 tons per day is under negotiation with the Government of India as a joint venture. The paper plants will use wild grass, waste paper, and rags as principal raw materials.

1/ Feasibility Study Report on Wooden Parquet in the Far-Western Development Region. ISC, Kathmandu, 1981

2/ A project for a second match factory to meet the demand in the Far-Western Development Region was presented at the UNIDO Solidarity Ministerial Meeting for Co-operation in the Industrial Development of Nepal, November/December 1982.

Rosin and turpentine: Two rosin and turpentine plants are under construction in western Nepal. At full capacity, the plants will produce 4,900 tons of rosin and 1,300 kilolitres of turpentine. These products are processed from extracts from Chirpine trees which are found in abundance in the hills of Western Nepal.

Medicinal herbs: Medicinal herbs are an important resource in Nepal. These herbs are used in the manufacture of drugs used in Ayurvedic and Yunani methods of medicine therapy. Exports of medicinal herbs from Nepal to India and overseas countries have been rapidly increasing from 1,200 tons in 1979/80 to 1,800 tons in 1980/81 and 2,800 tons in 1981/82. The total value of these herbs was NRs. 20 million in 1979/80. In late 1981, the Government launched a pilot herb processing project with annual capacity of 6 tons on a three shift basis. The herbs needed for processing by the project are to come from cultivation - in government as well as private farms - and from forests. The processed herbs are to be supplied to the public sector pharmaceutical plant and also exported to India. A recent study by ISC has proposed the establishment of a herbs processing unit at Bharatpur in the Central Development Region. The proposed plant capacity is 150 tons per year and the bulk of the output is to be exported.[1/] In view of the fact that a large volume of the herbs is being exported unprocessed, the feasibility of establishing more units needs to be studied. However, before the identification of processing possibilities it is desirable that a resource survey on herbs is conducted and a comprehensive plan for utilizing this resource is drawn up.

In 1981-82 the Royal Drugs Limited (RDL), a public agency, made about 80 different preparations; its short-term objective was to offer about double that number which would meet about 65 per cent of the country's total needs. About 2,000 other drug varieties are imported.[2/]

The Royal Drugs Research Laboratory (RDRL) of the Department of Medicinal Plants of the Ministry of Forestry with has UNIDO assistance assessed the

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1/ Feasibility Study Report on Medicinal Herbs Processing in Central Development Region. ISC, Kathmandu, 1982.

2. UNCTAD, 'Technology Policies in the Pharmaceutical Sector in Nepal'.

technical and commercial feasibility of large scale production by Royal Drugs Ltd of pharmaceutical products based on locally available herbs. Investigations were also made regarding manufacturing of essential oils from these herbs. The overall objectives of the assistance included also the development of the processing of medicinal herbs and production of essential oils and pyrethrum[1/] for exports. Although it was intended to prepare a feasibility study for large scale production by the newly established Herb Production and Processing Company (HPPC) of pharmaceuticals and essential oils under the assistance project this could not be done due to insufficient market informtion. It is envisaged that such a study can be made within the next year when more information is available. In one of the terminal reports[1/] of the assistance project it is observed regarding essential oils production that Nepalese production is conditioned by the market situation existing in India, given the fact that the Indian market is protected vis-à-vis imports of essential oils originating from third countries, but Nepalese oils have free access to the Indian market. As such, market prices for citronella (Java) oil tend to be higher in India compared to world market prices, whereas Indian prices for lemongrass and palmorosa oil are lower than world market prices. It should be noted that prices depend a lot on the quality of the oil offered, and that a serious effort to upgrade and maintain quality standards is necessary if Nepal is to succeed in this field. On the cost-side, it is important to work on fuel-efficient distillation methods, in view of the high costs of fuelwood in most Terai areas. The terminal report further notes i.a. the following regarding specific products:

1/ Ref. "Pyrethrum Cultivation in Helambu". Report by Bart Dominicus, Netherlands Development Service and W.J. de Boeck, UNIDO, 15 December 1982 (stencil).

1/ See terminal report on "Strengthening the Royal Drug Research Laboratory". DP/NEP/80/003, (DP/ID/SER.B/428, 11 November 1983). Three further terminal reports (DP/ID/SER.B/434, 4 January 1984, DP/ID/SER.B/442, 7 February 1984, and DP/ID/SER.B/446, 15 February 1984) have been issued. These outline efforts under the technical assistance project to strengthen the RDRL so that it may serve as an R and D centre for the development of both an essential oils industry and a medicinal plant industry. RDRL is to further serve as a national quality control laboratory for drugs. See also "Identification of Export-oriented Projects in Nepal" report prepared by Jean Barnerias, ITC Consultant, October 1982 (Part B: "Processing of Medicinal Herbs for Export") and "Potential for an Export-Oriented Essential Oils Industry in Nepal" by R. Schwob, ITC Consultant, 30 June 1982.

Citronella grass seems to be only marginally profitable at this stage. The price demanded by the HPPC is too high when compared to the actual market price (which has a declining trend in view of increased production in India).

Lemongrass could be profitable if it can be grown on marginal land under agro-forestry conditions. However, more research is required in this field.

Palmarosa oil looks profitable at this point, in the international as well as the Indian market. The quality is accepted in the market.

Mentha arvensis produced in Nepal has a low menthol content, therefore the price offered is also low. It is necessary to remedy this through the introduction of improved plant material. Since the cultivation of metha is relatively labour-intensive, it could become an interesting crop for extention to private farmers, once the quality problem has been solved.

(c) Energy resources and their industrial use

(i) Hydro-electric power

Hyrdo-electric power constitutes by far the greatest part of the potential energy resource endownment of Nepal. Among the countries in the world, only Brazil has a larger hydro-power potential than Nepal. The country's theoretical power potential is estimated at 83,000 MW. Of this, 25,000 MW is believed to be economically feasible at present.

Four major river systems, the Mahakali, Karnali, Sapta Gandaki and Sapta Kosi, whose tributaries originate in the Tibetian plateau and the Himalayas, account for 90 per cent of the country's surface water and most of its hydro-electric potential. The water from these systems is supplemented by a number of smaller rivers draining the lower hill areas and foothills. The theoretical hydro-power potential of the major river basins is shown in Table 20.

However, Nepal has so far been able to develop only a small fraction of this potential resource. To date, the country has installed capacity to generate 113 MW of hydro-electric power - only 0.5 per cent of the economically feasible potential. Generating capacity stood at 53 MW before

Table 20. Theoretical hydro-power potential

River basin	Power potential (MW)
Karnali and Mahakali Basins	36,170
Sapta Gandaki Basin	20,650
Sapta Kosi Basin	22,350
Southern River Basin	4,110
	83,280

Source: Country Paper in Nepal. UN Conference on New and Renewable Sources of Energy, August 1981.

1982 when a 60 MW 'peaking station' was commissioned.[1/]

Within the last decade, mini and small hydro-electric projects have been increasingly supplementing the energy needs of the hill and mountain regions. So far, nine small and mini hydro-electric projects with a capacity to generate about 1,400 KW of electricity have been commissioned. An additional 18 projects are under construction. On completion of these projects, generating capacity will increase by 4,500 kW.

Two important hydro-electric projects with a combined capacity of 47 MW are under construction. One of the projects is the 14 MW Devighat project on the Trisuli river and the other project is a 33 MW Kulekhani Phase II project.[2/] The former is scheduled for completion in 1984 and the latter in 1986/87. Two other major hydro-electric power projects planned for completion by 1990 are a 66 MW project on the Marsyangdi river and a 150 MW project on the Sapta Gandaki river. Construction work on the Marsyangdi project is to start shortly and is scheduled for completion in 1986. Preliminary studies

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1/ The total installed capacity to generate electricity in Nepal is 149.5 MW - 113 MW from hydro-electric projects, 32 MW from diesel operated units and 4.5 MW from steam operated units. Most of the generating capacity from diesel (24 MW) is on standby because of high operating costs. The total generating capacity is supplemented by up to 17.3 MW of power from India.

2/ The Kulekhani Phase II Project is also a peaking station like the Phase I Project.

for the Sapta Gandaki project are complete and the project is proposed for construction by 1988 when demand in Nepal is expected to reach 230 MW.

Prelimirary studies have identified the potential for over half a dozen medium and large hydro-electric projects. Three of these projects have a generating capacity of over 250 MW each and have a combined generating capacity of about 5,000 MW. These projects are the 3,600 MW Chisapani project, the Karnali Band project with a 250-500 MW potential and the 1,000 MW Pancheshwar project. The first two projects are to be located on the Karnali river and the third project on the Mahakali river which demarcates the western boundry between India and Nepal. The Chisapani and Pancheshwar projects have great potential for exporting hydro-electric power to neighbouring countries. The implementation of these projects would, however, depend on the availability of financial and technical assistance from donor countries and multinational agencies.

(ii) Biomass

Fuelwood is the dominant source of energy in Nepal. In 1978/79, it accounted for 91.8 per cent of the total energy consumed in the country. It accounted for 96 per cent of the energy needs of the domestic sector and 29 per cent of commercial/industrial sector needs. However, because of the increasing depletion of forest resources, particularly in the hills, fuelwood is rapidly becoming scarce and already demand for fuelwood outstrips supply. In 1977, the sustainable supply of fuelwood was estimated at 5.0 million cubic metres - 3.1 million cubic metres in the hills and 1.9 million cubic metres in the Terai. On the other hand, demand was 10.0 million cubic metres - 7.2 million cubic metres and 2.8 cubic metres in the hills and Terai, respectively. The 1977 deficit of 5 million cubic metres is projected to increase to 16.3 million cubic metres by 2000 A.D., if the present pattern of fuelwood consumption continues.

The development of biogas as a source of energy was initiated only during the last decade. Since then, over 750 gobar gas plants, which utilize animal dung, have been installed. Most of the plants have a capacity of about one cubic metre per day, sufficient to meet the cooking and lighting requirements of a rural family. About 50 kg of animal dung (available from 5-6 cows) are

required every day to operate a plant. Total theoretical availability of dried dung is estimated at 4.2 million tons per year.

(iii) Hydrocarbons

Nepal has no proven deposits of petroleum fuels. Petroleum fuels accounted for 3.6 per cent of total energy consumed in 1979/80. The transportation sector alone consumes 55 per cent of all petroleum fuels.

Some deposits of natural gas have been found in the Kathmandu Valley. One estimate puts the total gas deposits at 40 million cubic metres. However, the bulk of this deposit has yet to be exploited commercially. In addition, three significant gas seepages have been found in Dailekh, a hill district in Bheri zone, where the gases exude from fractures in metamorphic rocks. Further exploration is required to establish the potential of this resource.

(d) Mineral resources and their industrial use

Geological surveys and mineral exploration efforts made so far have indicated the presence of few exploitable mineral resources. The major known exploitable minerals are lead, zinc, iron, magnesite, talc, limestone, dolomite, marble, silica, and building and construction stones.

A brief description of mineral deposits which are presently exploited, those planned for exploitation, and those which have mining potential, is provided below. The quantity of production of various minerals 1972-1977 is given in Table 21.

(i) Lead and zinc

A deposit of zinc and lead at Ganesh Himal in Rasuwa district of Bagnati zone is estimated to contain 469,000 tons proved ore and a further 407,000 tons of probable ore containing 11.87 per cent zinc and 1.66 per cent lead. A joint venture project between the Government, an Indian company and an English company is under construction and will mine 120,000 tons of ore annually. The project is planned to produce about 18,666 tons of zinc concentrate containing 60 per cent zinc and 2,601 tons of lead concentrate containing 60 per cent lead. This project is expected to generate sales revenue of $5.97 million

from the second year of its operation through exports to India. (See also Chapter IV regarding possible use of the zinc and lead for wet-cell battery production.)

(ii) Magnesite

A magnesite deposit at Kharifhunga in the Dolakha district, Bahmati zone is estimated to contain 180 million tons of magnesite with 66 million tons of refractory grade. This resource is of international significance because of the large size of the deposit and its high grade ore. A joint venture project (Orind Magnesite Ltd.) between HMG/N and an Indian company is under construction and will start mining the deposit from 1986. The project has a capacity of 50,000 tons of dead burnt magnesite per year. Plans also exist to set up a refractory plant in a second stage.

(iii) Talc

About 300,000 tons of proved talc resources exist at Kharidhunga. This deposit is planned to be mined and produced together with magnesite. A plant with annual capacity of 10,000 tons was installed in 1981/82 and has already gone into production.

(iv) Limestone

Abundant quantities of cement grade limestone are found along the Mahabharat Range in the South. The major deposits are indicated as follows.

Limestone deposits at Chobar in Kathmandu Valley are estimated at about 15 million tons (7.8 million proved and further 6.7 million probable). A cement plant with a capacity of 140 tons per day has been exploiting this deposit since 1975. Plans are under way to expand the plant capacity to 400 tons per day.

A deposit of 10 million tons of proved grade limestone exists at Bhaisedobhan in Makawanpur district of Narayani zone. A 750 tons per day capacity cement plant owned by Hetauda Cement Industries Ltd. is under

Table 21. Production of various minerals, 1972-1977

Minerals	Unit	1972-73	1976-77
A. Metallic			
1. Baryl	Kg	150	16
2. Copper (metal)	Kg	2	-
3. Copper (ore)[a/]	Tons	4	7
B. Non-metallic			
1. Asbestos	Kg	374	-
2. Clay, white	Tons	-	-
3. Clay, yellow	Tons	6	-
4. Garnet	Kg	26,127	29,600
5. Graphite	Tons	-	-
6. Limestone (chemical gr)	Cu. metre	-	1,473
7. Mica, crude	Kg	8	-
8. Ochre	Kg	-	-
9. Quartz, crystal	Kg	-	-
10. Salt	Tons	4	6
11. Talc	Tons	44	72
12. Tourmaline	Kg	2,246	75
C. Fuel minerals			
1. Lignite	Tons	233	1,958
D. Structural construction minerals			
1. Chips (marble)	Tons	94	67
2. Gravel and boulder[b/]	Cu. metre	609,131	-
3. Limestone	Cu. metre	2,973	26,000
4. Lime (hydrated)	Cu. metre	-	-
5. Marble, craggy[c/]	Sq. metre	2,594	490
6. Marble, slab[c/]	Sq. metre	51	819
7. Paving stone	Sq. metre	-	-
8. Slate	Sq. metre	413,912	-
9. Stone[b/]	Cu. metre	3,290,088	-

a/ May include copper (metal)

b/ Production by Government projects.

c/ There was a production of 7,000 tons of red clay, 514 tons of marble block and 5,720 tons of marble in aggregate in 1976/77.

Source: Bureau of Mines, HMG/N, Kathmandu.

construction at Hetauda which is close to the site.[1/] This plant is scheduled for commissioning in 1985.

A significant limestone deposit exists at Udaipur district in Sagamatha zone. The deposit is estimated to contain 70 million tons of proven chemical grade limestone. A cement plant with annual capacity of 400,000 tons and with provision to double the capacity is proposed for construction as a Nepal-India joint venture. Preliminary work on the project is to be initiated by the end of the current Sixth Plan.

A small limestone deposit exists in Dhading district of Bagmati zone. This deposit is estimated to contain approximately 1.9 million tons of proven chemical grade limestone with 25 per cent of recovery. This deposit is currently being mined by a public sector project (Agricultural Lime Co. Ltd). The project has a capacity to produce 6,000 tons of chemical lime and 1,000 tons of construction lime. The Agricultural Lime Co. Ltd also produces 6,000 tons of agricultural lime per annum based on the Chabhar limestone deposit.

Other deposits of cement grade limestone (total probable desposits amount to 87.5 million tons) are the following:

- A 10 million tons of proved deposit at Okhari in Makwanpur district of Narayani zone. This deposit can serve as a back-up reserve for long-term sustenance of Hetauda Cement Industries.

- A 8 million tons probable deposit of cement grade limestone in Argakhanchi district of Lumbini zone. From a mining point of view this deposit was initially not considered economically viable due to a high overburden ratio unless underground mining is considered. But further review has indicated the ratio of limestone and overburden as 1:1 which is within the economic limit of open mining cost for this type of deposit.

- One 25 million tons deposit at Chaukune and one 30.5 million tons at Lakharpata, both being probable reserve estimates of cement grade limestone in Surkhet district of Bheri zone. The topographical condition and the geological structure are more favourable in Chaukune for mining purposes.

- Three other deposits all in Surkhet district, one 4 million tons probable reserve at Gothikanda, one 10 million tons probable reserve at Salleridada and another at hills (probable reserve not yet estimated).

1/ 'Nepal: Hetauda Cement Project Preparation', World Bank/UNIDO Report, January 1976.

The quality of limestone in these three deposits has yet to be established by chemical analysis. Power and road facilities are the main constraints to establishing plants at these sites.

(v) Iron ore

Deposits of iron amounting to 10 million tons with 54-58 per cent iron exist at Phychoki, one of the hills surrounding the Kathmandu Valley. A preliminary study indicates that a mini-steel plant with 50,000 tons per annum capacity may be feasible. However, an updated study will have to be made before further investment is considered.

(vi) Dolomite

A 5.69 million tons of deposit of dolomite exists in Udaipur district of Sagarmatha zone. The possible commercial exploitation and industrial utilization of this resource should be further investigated.

(vii) Silica

Deposits of about 3 million tons of silica sand exist in Makwanpur district. The sand is suitable for ordinary glass making, foundry, and fluxing. Luxmi Glass Industries at Hetauda was established in 1974 to use their sand. It has manufacturing capacity of 8 tons per day of glass bottles and tumblers. The sand was later found unsuitable due to high iron content, however, and the plant was closed in 1979, being uncompetitive due to its dependence on imported sand.

(viii) Boulders and gravel

Boulders and gravel are found in abundant quantities in the neighbourhood of the Terai rivers and river terraces. This is a practically inexhaustible resource suitable for construction. It has been suggested that boulders, stones and gravel may find an export market in India and Bangladesh despite their low value/weight ratio. No systematic study of this resource has, however, been carried out.

(ix) Other minerals

Other minerals currently extracted in small quantities are the following: copper, semi-precious tourmaline, baryl, garnet, slate and clay. Estimates of deposits of these minerals are not available.

(e) Conclusions

As the above inventory would suggest, apart from its huge potential in hydro-power Nepal is relatively poorly endowed with natural resources. The scope for industrialization on that basis will be further looked into in Chapter IV, but a brief recapitulation here would be in order.

Both the agricultural crops grown for subsistence and for cash surplus have been subject to adverse weather conditions and the worsening pressure of population on the land. These factors have only served to highlight the weak state of the country's rural infrastructure. The Sixth Plan contains very ambitious forecasts for higher crop output. However, there are obstacles to greater output embedded in the structure of the markets facing farmers - and these may act to constrain rural development. At the same time it should be noted that the obvious agro-processing facilities - such as rice milling, oil extraction, flour mills and so on - exist. Their history has tended to be troubled, however, with output following an uncertain course as either the raw material or cooperant inputs have fallen short of the volumes necessary to achieve full capacity utilization.

Regarding the animal-based sectors, the recent problem of over-grazing has diminished the quality of feed available for the animals kept in the hilly areas of the country. This has in turn diminished the output of the associated leather, milk and wool products plants. The animal-based sector has, however, also faced problems associated with consumers prefering imported goods, when they can afford them.

Dwindling forests reflecting the pressure of fuelwood gathering by rural inhabitants make the potential use of forestry for industrial processing less promising at least in the short run. Again, however, it is not merely the limited availability of the raw materials input which is constraining

manufacturing. There are real problems of the domestic market size and problems with exporting bulky wooden objects.

While abundant in principle, the Nepalese government does not have the resources to develop water power fully, nor it is clear to whom and under what circumstances any export surplus, as it were, could be disposed of.

Cement grade limestone is the mineral deposit of most immediate use in the country. Advanced plans for industrial utilization of the lead and zinc deposits and the magnesite deposits also exist.

Chapter III

INDUSTRIAL STRATEGY: WHICH WAY FORWARD?

The difficult circumstances facing Nepal's industries were discussed above and the economic background against which they must function is set out in Annex A. This chapter will now look in more depth at the factors which have been constraining the growth of an industrial base in Nepal. Some of the issues here are fairly self-evident; they include the small size of the domestic market, the land-locked position and the difficult terrain which has to be crossed. Others, however, are less obvious. The second half of the chapter therefore assesses the ways in which the immutable aspects of the country's situation - its geography, its climate and so on - are likely to affect the extent and the pattern of its industries and then looks at the ways in which policy itself is likely also to shape industrial development.

(a) Some fundamental constraints on industrial development

(i) The limited size of the domestic market.

The limited size of the domestic market is illustrated by the fact that more than 90 per cent of the population are dependent on agriculture with very low household incomes. Statistics on income and distribution are given in Tables 22 and 23. The main features are a very low average, only NRs. 5.569 in 1977, a skewed distribution with more than half of the population below NRs. 4.000 and about a third below the minimum subsistence level of NRs. 2 per

Table 22. Income distribution in rural and urban areas, 1977

Income level (NRs)	Whole country	Rural areas	Urban areas
Below 4,000	51.2	56.5	30.6
4,000 to 14,000	33.9	35.0	54.6
14,000 to 40,000	6.7	5.6	11.4
40,000 and above	3.1	3.0	3.4
	100.0	100.0	100.0

Source: Employment, income distribution and consumption patterns in Nepal, Vol. IV. National Planning Commission, HMG/N, Kathmandu, 1978

capita expenditure per day and, finally, a somewhat higher concentration of poverty in rural than in urban areas.

Table 23. Percentage of households and population below subsistence level, 1977

(In per cent)

	Households below minimum subsistence level	Population below minimum subsistence level
Rural	35.5	33.0
Urban	23.5	24.0
National	33.2	31.3

Source: Ibid.

Moreover, geographical realities and the absence of physical infrastructure in many parts of the country have led to the market developing as numerous fragmented pockets of economic activity. An indication of the wide spread of the domestic market is given by the population figures for the country's four development regions and their constituent development zones (see Table 24). Furthermore, since only 5 per cent of the population lives in towns and the more readily accessible Terai areas, there are real problems in reaching a sizeable market for one's products.

An increase in the size of the domestic market is therefore largely dependent on either an increase in agricultural earnings, that is, an increase in agricultural productivity, or an exodus from agriculture into other sectors with higher productivity. Notwithstanding the high priority given to self-sufficiency in food production, it seems reasonable to assume that there is some surplus of labour in agriculture and that this is potentially available for gainful employment in industry or elsewhere.

(ii) The land-locked position

As borne out by other examples, being land-locked is not necessarily as such a constraint on economic growth and development, and nor does it necessarily help to have a coastline. The geographical disadvantage experienced by least developed countries, whether island states or land-locked like Nepal, is rather one of remoteness from rich and relatively unprotected markets.

Table 24. Area, population and density by development regions and zones 1976

Development regions and zones	Area (sq.km.)	Population ('000)	Density (per sq. km)
Eastern Development Region (Dhankuta)	27,994	3,067	110
Mechi	7,211	675	94
Koshi	10,138	1,167	115
Sagarmatha	10,645	1,225	115
Central Development Region (Kathmandu)	28,199	4,319	153
Janakpur	9,150	1,410	154
Narayani	8,371	1,247	149
Bagmati	10,678	1,662	156
Western Development Region (Pokhara)	28,286	2,713	96
Lumbini	8,971	1,304	145
Gandaki	10,871	995	92
Dhawalagiri	8,444	414	49
Far Western Development Region (Surkhet)	60,914	2,737	45
Rapti	9,505	795	84
Bheri	10,529	660	63
Seti	12,488	658	53
Karnali	21,632	221	10
Mahakali	6,760	403	60
Nepal	145,391	12,837	88

Source: Population Census 1971; Population and Mid-term Population Sample Survey 1976, Central Bureau of Statistics, HMG/N, Kathmandu.

This constraint cannot of course be alleviated in any literal sense. It implies a resource cost borne by the country in the form of transportation to and from overseas markets, and consequently such a country is prevented from participating in and hence from reaping the fruits of the international division of labour in the same measure as its natural resource endownments might otherwise dictate.

It is not surprising, therefore, that Nepal's foreign trade share is smaller than one would expect from a country of that size and stage of development. Imports of goods and services constitute only about 18 per cent of the gross domestic product and exports of goods and services only about 12 per cent.

(iii) Infrastructural shortcomings

In a country like Nepal, where natural resources are scattered over many inaccessible places and a large portion of the people is living isolated from one another due to formidable physical barriers, economic development presupposes a prior development of transportation to a considerable extent. By 1956 (at the beginning First Five-Year Plan) there were in Nepal 624 km of roads, 80 km of narrow gauge railways,[1/] and less than half a dozen (mostly fair weather) landing grounds for local airways. This represented the entire modern means of transportation of the country with 9 million people, most of them living in some 29,000 villages and cities. The position has changed but little at present. Even now much goods are being carried from one part of the country to another on human back or on yaks or mules. Still it should be noted that the roads are now altogether of a total length of some 5,000 km . Apart from the airways which have developed rapidly and play a crucial role in linking remote parts of the country, the existing modern transport facilities are confined essentially to the Kathmandu, Pokhra and Chitwan Valleys and most parts of the Terai which together account for less than 25 per cent of the area and 40 per cent of the population, while the remaining part of the country is yet virtually without any modern means of transportation.

Mention should also be made of the potential of ropeways powered by electricity. One such ropeway exists between Kathmandu and Hetauda (64 km). In view of the country's topography (which tends to limit the possibilities for a railway network) and immence hydro-power resources consideration may be given to possibilities of ropeways to become the most economical means for shipment of freight over short distance from one mountain region to another. The experiences of other countries like, Switzerland, Italy and Spain where ropeways frequently are in use for transport of goods on short hauls may be of great interest to Nepal.

1/ 45 km from Amtekhganj to Raxaul and 35 km from Janakpur to Jayanagar by the Indian frontier. While the first mentioned line has subsequently been put out of operation, there is a possibility to convert the existing line Janakpur/Jayanagar to broad gauge and link the rail head into Udaipur (cement plant) in the north and with Muzzatarpur in the south which is a major railway junction in Bihar State of India.

Although the country abounds in hydro-potential, the generating capacity as of yet is only 150 MW. By the mid-1980s electrical generating capability is planned to increase to about 260 MW. Emphasis is being given to mini-hydroplants for rural electrification. According to recent forecasts made on the basis of present conservative demand assumptions, demand is expected to be in the order of 300 MW by 1990. Until recently, supply constraints had necessitated suppression of demand through selected power reductions at peak periods. This problem may very well emerge again before the end of the decade. Periodic electricity shortages have hampered - sometimes severely - the ability of factories to plan ahead and deliver on time at forecast unit cost levels. Surges in voltage, from around to 220 to 400 volts, are not uncommon; these oblige owners of expensive equipment to protect themselves by buying costly voltage regulators. The matter of complicated administrative procedures has also been noted by several commentators. The recent World Bank energy study team[1/] observed how permits are required from even small turbine operators if they wish to sell power to nearby villages.

During the postwar period there have been considerable oscillations in the views as to the significance of physical infrastructure for economic development. Initially such investment was given a very high priority in, for instance, World Bank lending, but subsequently certain doubts arose as to the productivity of this type of investment. The present notion is that the infrastructure area is one in which costly mistakes may easily be made, but also one in which seriously constraining bottlenecks exist and may be dissolved through the appropriate type of investment.

As a general proposition it is undoubtedly true that as of present the transportation network as well as the electricity system are insufficient to meet the requirements of rapid industrialization. But each investment within these areas needs to be carefully considered within the framework of not only industrialization, but general economic development strategies.

Finally, a part of the infrastructural environment may be mentioned shortcomings in efficiency of the administrative machinery. This constraint

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1/ World Bank. "Nepal: Issues and Options in the Energy Sector". August 1983.

can be described in only very general terms, although it may be crucial. Examples, however, abound. Among these, one might mention the often cumbersome licensing and customs procedures, difficulties in taking advantage of tax exemption schemes and other incentives because of an insufficient co-operation and communication between the ministries of industry and finance, the alleged inefficiency of a number of public enterprises, problems of obtaining loans particularly for fixed industrial investments etc. The disincentive to further industrialization constituted by these and similar administrative inefficiencies cannot of course be quantified, but it is likely to be quite significant. This presumption does not, however, imply any incompetence in individual civil servants, but only the need to streamline administrative procedures.

To this end the carrying out of a systematic assessment of administrative constraints, with the specific requirements for industry borne in mind, might be considered. The role of a representative body for the private industry, e.g. the Chamber of Commerce and Industry, as consultative organ in this context might be reinforced. Also, the possibilities in specifically assisting the industrial entrepreneurs in the various steps of administrative nature, required for setting up an industry as well as for its operation, should be looked into.

(b) Issues in Nepalese industrial strategy

What are the implications of this for the country's development prospects and, more specifically, for industrial development? The following sections discuss the ways in which development will be affected by these factors and how policy must begin by recognizing their significance.

Taking stock of the comments made in the earlier chapters, the following could be seen as the central issues facing the economy today:

- There is discussion within Nepalese policy-making circles of a resource-based industrialization strategy, be it primarily for outward or inward looking development, but which resources are to be the basis of that? The country's stock of minerals is such that only limited minerals-based processing can be foreseen; the country unquestionably has large hydro-power potential but both developing it and selling it present enormous problems; the forestry base is seriously threatened.

- If agro-based processing is to be a focus of industrialization, how will the serious impediments to a wider range and greater yields in agriculture be removed? Some of these, such as the growing pressure of population density on the land, appear to have no ready solution.

- To the extent that more extensive and intensive use of the country's labour is to be made in some form of manufacturing or processing, a number of different questions present themselves. First, it is not at all clear that there is year-round surplus labour on the land. Although there may be seasonal excess supplies of labour, it may not be perennial. Second, what products would be best suited to working by Nepalese labour, bearing in mind that although wages per day may be low compared to those obtaining in the neighbouring regions of India, transporting inputs and outputs is costly. Third, to what markets might these labour-intensive items make their way, given the facts, implied above, that they must be both labour-intensive and possess a value to weight ratio sufficient to justify extensive shipping?

- Although the amount of support and incentives being offered to industry by HMG/N and its various agencies has grown, there are questions as to the co-ordination of these efforts, and how well strategies are actually designed to match current problems.

- On the subject of outward-oriented industrial development more generally, be it via natural resource processing, sub-contracted manufacturing or whatever, what are the balance of payments implications of such thinking? It appears that the capacity to develop even rudimentary capital goods within Nepal itself is severely limited, and although most may readily be obtained from India's well developed capital goods industry, this implies a foreign exchange cost. What is the nature and extent of these costs, and how might the balance of payments stand to be affected by them?

- In what ways might the trade agreement with India be critical to the development of an outward-oriented development policy?

- To the extent that none of these policies should be pursued in isolation, but instead a "niche" strategy of ad hoc investments be adopted, it is essential that enterprises in Nepal be aware of what products are already competitively produced by Indian firms nearby and avoid direct competition with them. This implies taking a hard look at the structure and prospects of that part of the Indian economy which borders Nepal.

- In view of the physical terrain and patterns of farm-working in Nepal, it seems most likely that many of the people drawn into processing or manufacturing will work sporadically, part-time and occasionally for payment in kind rather than cash. To the extent that this is true, the framing of industry policy should recognize that formally-structured factories will only represent a small part of the efforts which are to be nurtured.

Each of these issues will be assessed in the remainder of this chapter, while Chapter IV, inter alia, will look at the degree to which the current posture of official policy seems consistent with this analysis. Before

beginning, however, a short discussion of what elements an overall industrial policy for Nepal might contain is presented. The stress is on the notion that only after considering how Nepal, with its particular resource endowment and capabilities, might fit into the already established markets its enterprises hope to serve, it is possible to talk about priorities for industrial infrastructure and capacity.

(i) Framing industrial strategy in Nepal

This section looks at the business of framing a strategy for industry in Nepal. It does so by focussing on market opportunities - that is to say, demand - as well as the choice of inputs - that is, supply. Thus, rather than beginning by posing the question "what factors should we seek to deploy most intensively in the country's development efforts"?, it begins by asking the question, "given Nepal's small size and disadvantageous location, what can be done to compete effectively in the home market and other markets one can realistically hope to serve?".

This market-focussed approach first attempts to understand the basis of competition in the markets in which Nepalese firms hope to compete, then works backwards to see to what extent Nepal's resources can be organized so as to address that competition better than, or differently from, existing suppliers. In doing this, one may distinguish three approaches to competition:

- being the low-cost producer (reflecting resource endowment);
- pursuing a niche or focus strategy, concentrating on doing a small number of things extremely well;
- differentiation, or offering products somehow distinguished from others with which they compete.

In thinking about these three strategies, it is important to bear in mind both supply and demand aspects, thus:-

- on the demand side, the issues centre around the question of how demand can be boosted within Nepal. The issues involved in piecing together an answer to this question include the following:
  - o can competiveness be upgraded through better marketing efforts, or refocused marketing efforts through better distribution methods, or other means?

- o can a different product-mix be arrived at, which induces greater expenditure, for instance, on the part of some of the country's many tourists?
- o can government procurement policies be devised to enhance the volume of demand facing local producers?
- o to what extent can further efforts at export diversification and export promotion be made?

- on the supply side, the issues include:

- o how effectively are the country's agro- and forest-resources being produced?
- o how efficiently are the country's resources being used in industry?
- o what might the optimal ways to organize production be - and in what proportion might cottage-based, small or medium factories be deployed?
- o what is the optimal nature and extent of government assistance that could be made available to each of the above forms of production? What is the best method of delivering such assistance to these various forms of organization?

It is not possible to answer in detail all these question but an attempt is made to initiate some discussion and examination of the various issues. For instance, in the discussion of exports of processed and manufactured goods, an effort is made to determine in what products and in what markets Nepalese firms can really bring local materials and low labour costs to bear, as opposed to those markets where that advantage is rendered irrelevant by other factors, such as transport costs.

Above all, the questions are put forward primarily with the purpose of guiding the work of HMG/N concerning the industrial strategy.

(ii) Exporting processed and manufactured goods

There is no doubt that, in absolute terms, Nepalese labour costs are a small fraction of those obtaining in the main western markets. A survey of textile makers' wages in 1980 established that while wage costs per hour in Nepal were $0.35, in France they were $7.41 and the USA $6.37.[1/] (The

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1/ The figures refer to average cost per operator hour plus overhead, allocated over three shifts, in textile factories in early 1980. The survey was carried out by Werner International and was quoted by the UNCTAD/GATT Trade Promotion Centre.

figures, obviously, are subject to exchange rate fluctuation). However, the differential was considerably less when compared to other developing country locations nearer to Western Europe. Examples would be Morocco ($0.90/hour), and Turkey ($0.95/hour).

What matters in examining, for instance, textile export prospects, however, is not merely the absolute cost of labour but also:

- the productivity of that labour, expressed in terms of output per hour of a given quality;
- the importance of labour in total costs;
- the extent to which the physical location of Nepal undermines the apparent advantages of the low labour costs.

What evidence exists to suggest that these factors can be dealt with satisfactory? If one examines recent Nepalese data, it seems that to some degree at least, Nepalese garment producers have been able to grapple with these factors. Thus, ready-made garment exports, other than to India, grew between 1974/75 and 1981/82 from NRs 1.3 million to NRs 13.8 million, in the process growing from 0.8 per cent of total export value to 3.0 per cent.

Moreover, the experience of Indian firms strongly suggests that many difficulties can be overcome. Indian textile wage earnings per hour may be as much as twice as high as those in Nepal - the Werner International survey put them at $0.60/hour as against $0.35 in Nepal[1/] - against which the costs of transportation from Nepal to an Indian port have to be set. But Indian exports must travel internally too: not all garment-makers will have ready access to a sea-port. Thus, it may be fair to conclude that on cost and product composition grounds, Nepalese producers do not face vastly worse problems than do Indian producers. This in turn implies that the marketing efforts of the Nepalese and, possibly, also their attention to the quality aspects may have been inadequate up till now.

Another product which, on the surface at least, appears to hold some attractions is carpet production for overseas markets. Prospects for carpet exports appear to be good, particularly since:

1/ Figures comparing wages in Nepal and India have to be treated with all possible reservations; it is a fact that there is an influx of labour from India willing to work at Nepalese wages and being preferred because their productivity is higher.

- so far, despite vigorous growth of sales, Nepalese carpets still only account for about 0.5 per cent of world trade in carpets;

- the crisis in some other carpet producing areas has led to a diminishing of the world supply of good quality carpets;

- carpets have characteristics and raw materials availability which ideally fit Nepal's endowments, having a high value to weight ratio,not requiring a great deal of capital endownment, allowing work to be carried on seasonally, whenever other demands allow, and absorbing both semi-skilled and skilled labour;

- the above factors also allow labour in the outlying areas of Nepal to be involved in carpet production. For the extra cost of transporting the carpets beyond the Terai is (a) small relative to total cost and (b) to some extent outweighed by lower wage costs in the hill area. A study by the World Bank[1/] estimates that only a 3 per cent lower wage cost in the outlying areas would be sufficient to compensate for the extra shipping necessary.

- market surveys indicate that a 35 per cent annual increase in Nepalese carpet exports can be maintained if the production bases is expanded, wood imports secured and market contacts broadened. Such a development would be likely to generate foreign exchange earnings of about NRs 160 million over four years, with local value added of about NRs 90 million.[2/]

- such an expansion of 35 per cent per annum would represent within these years about 12,000 additional man years (assuming a 200 day working year). About 40 per cent of the workers required would be unskilled, for carding, spinning and finishing. The expansion of carpet exports (and of other similar products) could thus add quite significantly to the country's foreign exchange earnings and employment.

(iii) Patterns of production

Two basic factors, in particular, affect the pattern of production of manufactured goods in Nepal, namely:

- The small size of the urban market, since two thirds of the population live in the hills, where monetary transaction are peripheral and where the needs are met by their own production. Only 5 per cent of the population lives in towns and the more accessible parts of the Terai. As a consequence, many industries can only be set up on a small-scale, and often face stiff competitions from Indian imports with established brand names and channels of distribution.

- The shortage of industrialists. Entrepreneurs are giving preference to quick-yielding investments such as trade and real estate.

1/ Nepal, Cottage and Small Industries Project. World Bank, 1981.

2/ Ibid.

On the other hand, the importance of small-scale, family-based, seasonal or otherwise 'informal' enterprises, which may sometimes pay those who work in them in kind rather than with cash, has long been stressed in written and practical work. Its relevance in Nepal should be obvious, given that:

- there is not enough arable land to utilize fully the rural population;
- the farming in many cases only offers seasonal work and income;
- it is in the nature of an economy with a very low GDP that large factories, producing high volume of output, are very difficult to support (at least in the absence of a major export market).

The Government recognizes that cottage and small-scale industries are likely to be the form which the great bulk of the country's industries take for the foreseable future. Indeed, the Sixth Plan specifically states that cottage and small industries are to play a pivotal role in the country's development. Various agencies, among them ILO and the World Bank, have appraised the potential for creating employment and income in such enterprises; two points need to be made about this.

First, although on the surface there is plenty of opportunity for engaging in part-time cottage industry (in the hill areas, for instance, farming tends only to absorb four months out of the year), there are very real questions regarding the extent to which this time can be used profitably in natural-resource related work. The survey of cottage and small-scale industries carried out in 1979 for the World Bank found that average output per worker was lowest in forest-related and agro-based enterprises at NRs. 174 and NRs. 1,488 per annum respectively (at that time, $14.5 and $124). This compares with considerably higher output from metal goods industries (NRs. 10,172 or $848) or carpets (NRs. 7,064 or $589). Moreover, the fact that virtually all the cottage businesses surveyed - 243,726 out of a total of 271, 461 or 90 per cent - were engaged wholly or chiefly in forest and agro-based work, implies that these pursuits may be acting merely as some sort of residual absorber of labour.

Second, whatever the skills of the cottage organization or the family in making its goods, these goods need to be delivered to a market-place and sold, and those tasks are time-consuming and require certain types of knowledge which are unlikely to be freely available. This implies the need for

middle-men or traders of some kind who can place orders and be relied upon to ship goods. At present, such traders naturally exist. One's concern, however, is that if few traders are able to deal in items offered by many producers, bargaining conditions will heavily favour the former. Higher prices for the cottage enterprises, reflecting lower dealer margins, might be attainable if the wholesaler base could be widened. In the chapter on policy, this issue is taken up again, where it is suggested that a simple and efficient way of channelling assistance to this myriad of cottage firms is to assist the creation of more dealers and wholesalers, since wholesalers have a direct bearing on the market conditions facing the cottage firms.

Government policy on cottage and small-scale industries is, so far as one can judge from the Sixth Plan, to encourage them via various financial incentives. In so far as this differs from the attitude of outright bias espoused by some developing country governments against small-scale production, this is of course to be welcomed. However, one can question just how easily good intentions may be turned into practice, since:

- the constituency of the policy, the small enterprises themselves, are amorphous in nature and not easily counted or administered;
- selecting by region, type of enterprise or other criteria, the sort of firm one most wishes to encourage implies a prescience of market conditions that in fact few officials can possess.

For those reasons, identifying a sub-group of enterprises and earmarking substantial budget amounts for special loan units within the context of integrated rural development programmes in selected districts may not by itself constitute the most effective support even if these programmes also include various training activities. It might be more cost-effective to focus more attention on the economic circumstances within which the enterprises themselves must function. These would include:

- the structure of the dealers to whom they must sell;
- the complexity of the procedures involved in obtaining loans, and the type of collateral demanded before loans can be obtained;
- pattern of local public sector demand: is there scope for using more domestic goods?

(iv) Labour skills

The labour force of Nepal comprised 7.87 million persons at the latest census in 1976. Out of this total, 5.46 million persons (69.4 per cent) were economically active.[1/] The non-agricultural sector accounted for only 10.0 per cent of the total labour force. Manufacturing industry's share of total non-agricultural employment was only 6.7 per cent. Commerce and personal and community services were the most significant activity (Table 25).

The 1976 census also provides data on economically active population by broad occupational groups. Professional/technical workers comprised 3.7 per cent of the economically active population; production labour workers accounted for 5.3 per cent and clerical workers for 0.9 per cent, while farmworkers constituted 88.6 per cent. These figures reflect clearly the limited employment opportunities available outside of the agricultural sector.

Nationwide statistics on industrial manpower by level of skills are not available. However, a recent study by ISC provides information (summarized in Table 26) on skills in private sector establishments. The study covers 250 of the 300 or so establishments with fixed investment of NRs. 200,000 and above.

Table 26 shows that unskilled labour accounts for over 56 per cent of the private sector industrial labour force, semi-skilled workers for 24 per cent, adminstrative staff for another 18 percent and highly skilled workers for less than 1 per cent.

In the case of the public sector's technical manpower requirements, the government has worked out an elaborate manpower development programme to complement the public sector development programme during the Sixth Plan period. In the manpower development programme, technical manpower has been classified into 6 categories and three levels. The categories are the following: scientific and technical, civil engineers, other engineers, agricultural specialists, forest specialists and health specialists. The levels of manpower are classified as high, middle and basic levels. The total

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1/ Labour force is here defined as population of 15 years of age and above. The 1982 population estimate is 15 million of which an estimated 55 per cent, or 8.2 million, are economically active.

Table 25: Distribution of the economically active population by agricultural and non-agricultural activities 1976

Activity	Persones engaged ('000)	Percentage distribution (%)
Agricultural (incl. forestory, fishing)	5,572	89.9
Mining and quarrying	-	-
Manufacturing	42	0.7
Electricity, gas, water	2	-
Construction	5	0.1
Commerce	283	4.6
Transportation and communications	6	0.1
Finance and business service	8	0.1
Personal and community services	280	4.5
Total	6,198	100.0

Source: Central Bureau of Statistics, HMG/N, Kathmandu.

Table 26. Manpower in the private manufacturing sector, 1979

Category of manpower	Number employed
Engineer	55
Technologist	28
Specialist and expert	99
Manager and adminstrative officer	739
Supervisor (Adminstration)	104
Assistant (Adminstration)	3,313
Technician (high level)	129
Technician (low level)	5,346
Unskilled labour	12,857
Total	22,670

Source: Existing Manpower Stock Assessment and Manpower Requirements for the Sixth Plan Period (1980/81 - 1984/85) in the Private Manufacturing Sector. ISC, Kathmandu, 1980.

stock of technical manpower in the public sector stood at about 20,000 in 1979/80. The additional demand during the Sixth Plan period is estimated at about 19,500 persons. The manpower development programme is expected to augment the existing stock by about 16,200 persons (about 15,250 from educational institutions within the country and 950 from institutions from other countries) by 1984/85. Technical manpower supply will, however, still be about 3,300 short of the requirements in 1984/85. The shortage is expected to be most pronounced in the basic level manpower.

Although little of consequence can be done to meet the immediate shortage of technical manpower, arrangements for studies and training to be carried out in other countries are being made to develop the country's capacity to generate middle and lower level manpower. In order to meet the public sector demand for industrial manpower during the Sixth Plan and Seventh Plan, HMG/N has identified the need to train about 420 persons - 200 managerial level personnel, 100 engineers and technical level personnel, and 120 factory supervisory level manpower over a period of five years beginning in 1983.

Insofar as human skills relevant to industrial development are concerned, supply and demand estimates have thus been made only for the public sector. There is hardly any doubt, however, that shortages of many skills are felt or will arise, not only in the public but also in the private sector. Those most frequently mentioned are all technical, but nevertheless it seems obvious that also, and perhaps even particularly, commercial and general enterpreneurial skills are short in supply.

It is only rarely recognized that even unskilled labour may be a potential supply constraint. Given the fact, however, that less than 6 per cent of the economically active population is non-agricultural, there is not necessarily much room to expand even the employment of unskilled labour. But again, the possibilities of expanding industrial employment of unskilled labour depends mainly on the desirability of reducing the agricultural labour force.

At present the supply of labour at all skill levels does, however, contain a certain flexibility. First of all the possibility of importing labour from India is of course a convenient buffer, and secondly there seems

to be quite ample possibilities for drawing on unskilled agricultural labour outside of harvesting period.

However, even if it seems unlikely that insufficiencies of skilled (and unskilled) labour will constitute a serious bottleneck on industrial expansion, it is of course desirable in the long run to limit the needs for imports of skills from India.

(v) The proximity of India

Given that the economy of the southern part of the Terai is arguably more integrated with the Indian economy than it is with the Nepalese economy as a whole, are there then grounds for trying to capitalize on this by encouraging sub-contracting or other forms of shared processing across the border? Already there is only a vague distinction between the two nationalities as regards the ownership of enterprises. Indian nationals are prominent in the Terai economy, especially in cloth wholesaling and retailing, agricultural machinery and hardware.[1/] Although steps are being taken by the Nepalese authorities to indigenize the ownership of as much of the country's enterprises as possible - and many Indians are apparently responding by applying for Nepalese citizenship so as to retain their businesses - it is important to recognize that these individuals bring a vital factor to bear, namely, marketing ties to the greater Indian market, notably Allahabad and Kanpur. It might also be argued that such traders who by their nature must have a network of contacts and knowledge of the market, would be the best people to engage in cross-border assembly or processing works if it were economically worthwhile. To be worthwhile, such patterns of work would presumably have to offer:

- lower total costs, after allowing for the extra shipping costs, than if the work were all done in India; and
- suitable border arrangements so that no extra costs were imposed on those intending to bring work into Nepal in this way.

Looking at the recent pattern of imports, reveals that in 1978/79 NRs. 1,029 million worth consisted of manufactured items in SITC codes 6 to 9. The

1/ P. Blaikie, J. Cameron and D. Seddon, Nepal in Crisis: Growth and Stagnation at the Periphery (New Delhi: O.U.P., 1982).

composition of the goods imported for India could be taken as an initial indicator of the items which could be produced in Nepal itself, given that:

- there is a demonstrated demand, expressed in the import figures;
- at least as far as processed and manufactured goods are concerned, labour inputs are available at least as readily as in India;
- the transport costs of shipping between India and Nepal are clearly not such as to choke off demand, and if they were removed by production in Nepal itself this would be reflected, at least in part, in lower prices.

Given the overwhelming importance of India in Nepal's trade, the nature of the trade agreement between the two countries is clearly of major importance. From 1955 to 1978 a single treaty embraced both trade and transportation issues. Since then they have been negotiated separately, as the conditions of transit to and from Nepal through India are in themselves critical matters. There are three issues here.

The first is the substance of the trade treaty, which was most recently renewed for five years in March 1983. From Nepal's point of view, what is required is maximum duty free access to India, stability in the list of items offered favourable access to India, and, in return, an ability to alter tariffs and quotas coming into Nepal in line with existing Nepalese comparative advantage. As for the first item, 36 goods now enjoy duty free access to India, including sugar, lime, slate, cattle feed and poultry feed and leather goods.

Although some commentators have argued that the treaty has greatly stimulated Nepalese-Indian trade, calculations based on figures supplied by the Nepal Rastra Bank do not confirm this completely. Between 1978 and 1981, the first years of the renewed treaty the value of trade with India (defined as imports plus exports) grew by 31 per cent, whereas trade with all other countries grew by 83 per cent[1/]. It may be, of course, that trade with India would have grown more slowly without the treaty: this is impossible to tell. In any event, trade between the two countries had been declining in value in the preceding four year period.

1/ Actually, the data used are fiscal 1977/78 to fiscal 1980/81, first half, annualized.

The second issue involved here is that of surface transportation through India. The treaty dealing with transit goods for Nepal is not due for renegotiation until 1985 but there are already areas of serious concern for Nepal. Among the matters to be dealt with here are: favourable treatment of insurance for goods in transit; faster and safer handling, particularly at Calcutta, which typically gives rise to prolonged delays; the extension of the Raxaul railway line into Nepal itself (at Birganj) and simpler formalities.

It is probably inevitable that there be problems during the 1,000 mile trip between Nepal and Calcutta, and that warehousing and handling also be unreliable, but since these factors directly affect the cost to Nepalese consumers of the goods they purchase, and the value the producers receive for their exported goods, it is approriate for the Nepalese authorities to keep pushing for improvements.

The third issue here is that of Nepal's negotiating position when the two treaties become ready for re-negotiation. The negotiating position should be clear about what Nepalese interests most want, and the preceding discussion in this chapter has suggested that this should by no means be limited to changes in tariff levels at the border. It might instead be related more closely to the following possibilities:

- sub-contracting and shared processing across the border;
- encouraging a larger number of wholesalers, traders and buyers from India to inspect and then ship Nepalese goods into India, thus helping overcome the monopsonistic character of the market facing many Nepalese cottage producers at present;
- to the extent that Indian entrepreneurs and skilled craftsmen living in Nepal add to rather than detract from Nepalese economic activity, allow them ready access to whatever materials they consider are best ordered from India rather than Nepal.

Chapter IV

POLICIES AND PROSPECTS FOR INDUSTRIALIZATION

The comments made in previous chapters of this paper have implications for government policy as it affects industrialization, such as:

- The cottage or family-based enterprise is the basis of the major portion of non-agricultural productive activity in Nepal as far as employment is concerned, and is likely to remain so in the foreseeable future. All policies must be formed with this in mind. At present many cottage-based and small factory operations are receiving only a small proportion of the final retail value of their produce because negotiating power tends to rest with those middlemen who deal in their output. Until more advantageous selling prices can be obtained, directing policy at real or imagined credit shortages or skill deficiencies will be mere palliatives. The factors which presently obstruct cottage and small factory enterprises from earning higher income are the concentration of market information among a few middlemen, and their willingness and ability to travel widely in search of goods to buy and markets in which to sell.

- The location of Nepal means that, as far as processed goods are concerned, goods have to have a favourable value to weight ratio if they are to enjoy any success at all in the Indian market. Indian firms enjoy, over Nepalese firms in the same industry, close proximity to markets (with all that that implies for up-to-date market knowledge as well as lower transport costs) and economies of scale deriving from producing for a large market. On the other hand, real wages in northern India may be, in urban areas at least, up to twice as much as Nepalese real wages. The challenge to Nepal is thus to overcome the former problems so as to be able to exploit the latter advantage.

- Overall, the nature of the Nepalese economy - a something of an adjunct to the far more powerful northern Indian economy - implies that no simple or all-embracing policy proposals can be made, beyond those noted above. It would be inappropriate, for instance, to argue that because Nepal possesses abundant - if untapped - water resources and considerable - through now atrophied - forestry resources, these two factors should constitute major basis of a grand industrialization scheme. There are serious questions attaching to both resources, not the least being the vast capital needed to make use of them, and the subsequent problems of their location and their likely market outlets. On the other hand, varius agro-based and a few mineral-based industries have good potentials. Furthermore, the earlier chapters also espouse a more ad hoc approach, consistent with what recent work on business strategy calls a "niche" approach. Opportunities will have to be identified and acted upon as they arise. All that policy can hope to do in this environment is to ensure that whatever resources exist in Nepal can be deployed rapidly and efficiently enough to give Nepal some advantage over its better-placed neighbours and competitors.

(a) The industrial policies package

In the light of those comments, how does the current stance of official policy look?

The Sixth Plan (1981-86) aims at increasing GDP at an annual rate of 4.3 per cent, emphasizing the productive use of infrastructure investments made during previous plan periods. The industrial sector is expected to contribute significantly towards this effort and is planned to grow at a rate of 10 per cent per annum.

The major objectives of industrial development during the present plan period are stated as being:

- the creation of new and productive job opportunities in order to reduce the pressure on agriculture for employment.
- the attainment of self-reliance in the production of essential consumer goods and some development goods.
- the promotion of export-oriented industries in order to improve the balance of trade situation.

In accordance with these objectives the Plan gives priority to cottage and small-scale industries[1/] (which are viewed as being more labour-intensive than medium- and large-scale industries), to construction goods industries and industries which cater to the daily consumption of the people, and in general to export-oriented industries.

In an effort to promote industrial sector development, a new Industrial Policy came into force in 1981, while the Industrial Enterprises Act and an Act Relating to Foreign Investment and Technology were promulgated in 1982.

1/ Under the new Industrial Enterprises Act, the definition of cottage industries for purposes of fiscal incentives and technical services includes those with fixed investment, including land and buildings, of up to NRs. 500,000 in rural areaas and NRs. 800,000 inurban areas. Small-scale industries would be defined as those with fixed investment not exceeding NRs. 2 million. (Previously, cottage industries were defined as those with fixed investment of up to NRs. 200,000, including land and building; small industries were considered as those with fixed investment not exceeding NRs. 500,000.)

Special emphasis is put on the creation of a more favourable environment for private investment in the industrial sector. Monetary and fiscal measures including concessions on interest rates, income taxes, excise duties, salestaxes and electricity rates, are being offered to prospective investors. In addition, a number of institutional arrangements - in particular concerning the import regime and financial services - are elements in the package. Finally, special measures are being taken to attract foreign investment.

Interest rates are cheaper for priority industries. Thus for cottage industries rates are 11 per cent for both fixed and working capital and for certain other priority industries[1/] 12-15 per cent, as compared to 17 per cent for all other industries without access to concessionary loans. Enterprises located in backward regions are entitled to a 2 per cent deduction on the above interest rates.

In judging the possible impact of such interest rate concessions a number of factors must be kept in mind. First of all, except for most cottage industries, the establishment of an enterprise requires an industrial licence, usually issued by the Department of Industry. In issuing such a licence account is taken not only of the enterprise's economic and financial viability, which, of course, other things equal, will be enhanced by interest rate concessions. Second, access to loans on these concessionary conditions depends not only on satisfactory collateral, but also on a review of the project by the monetary institutions. This element of credit restriction may be more of an impediment than the interest rate itself. Third, depending on inflation even these reduced rates are not trivial to borrowers, even though they do reflect a real capital constraint in the economy. All in all, a certain scepticism with respect to the impetus provided to private investment by these interest rate concessions seems to be justified.

Income tax incentives similarly accord a certain preference to priority industries. Industrial enterprises are granted full income tax exemption ranging from three years to ten years and partial exemption. Such concessions vary according to industry categories, value added percentage, capacity

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1/ Basic industries, import-substitution industries, export-oriented industries, forest- and agro-based industries.

expansion, export performance, location and provisions for training the employees of the industrial enterprises concerned. For example, industrial enterprises producing essential consumer goods are granted income tax concessions for a period of seven years starting from the date of operation; agro-based special enterprises are granted full income tax exemption for ten years starting from the date of operation; enterprises located in the depressed areas are granted full income tax exemption for an additional period of three years, in addition to the normal tax rebates enjoyed by similar enterprises elsewhere; and so on.

One might have some reservations with respect to the impact of these income tax concessions too. First of all, it is acknowledged by the authorities that the tax collection system in Nepal is neither effective nor efficient. This may also be inferred from the fact that although the income tax system is characterized by relatively high and progressive rates on both personal and corporate income, the revenue from income taxes remains very low. It is tempting to conclude, therefore, that where tax evasion possibilities seem to be ample, exemption from taxes will not provide any significant incentive. Second, since the additional premium accorded to exporters of industrial products consists of rebates on income taxes, consequently it will become effective only after the tax exemption period has expired.

Third, while it is true that the linking of tax incentives with value added underscores the policy of exploiting domestic resources, there are problems. To some extent this policy may have been influenced by the Indo-Nepalese agreements on trade and transit, which require a certain degree of value added before goods can gain access to the Indian market and even for transit permits for third countries. However, this provision may unduly retard the development of those industries with low value added, but high employment potential and backward linkages.

Tying up tax incentives with value added is a new measure adopted by the recent policy document. It is however inconsistent with the objective of promoting an Export Processing Zone (EPZ), which may contain industries with less domestic value added. Industries established within the proposed EPZ are promised a flat ten-year tax holiday and 100 per cent rebate on excise duty.

Such provisions are not available to similar industries if established outside the EPZ. The reason for discriminating against industries outside the zone is not obvious, and one consequence may of course be a delay in establishing export-oriented industries until the establishment of the EPZ.

Other facilities and incentives provided to industry include exemption of excise duties for five years for cottage industries and three years for other scales of industry. Enterprises in backward regions are given an additional five years of exemption. Furthermore, sales taxes are not levied on cottage industry products and on imports of machinery and raw materials used directly by industrial enterprises. (In the course of Nepal's further industrial development some attention might be given to production of simple machinery and equipment[1/] and in that context certain protective or licencing policies may be considered.) The Government has also announced rebates on excise duties as a premium for improved capacity utilization. Finally, the incentives include concessions on electricity charges, urban property tax and a convertible foreign exchange facility.

In 1982 for the first time, a clear-cut act on foreign investment was promulgated. It accords special facilities and incentives to foreign investment, especially for large-scale industries, in order to provide capital inflow, generate technical expertise, and enhance productivity. Foreign investors are permitted to have a majority shareholding in medium-scale industries (in which fixed assets investment exceeds NRs. 2 million but is below NRs. 10 million) and in the case of large industries (in which fixed investment exceeds NRs. 10 million) foreign investment may amount to 100 per cent. Ownership and investment in cottage and small industries will, however, be reserved for Nepalese nationals only.

In the case of foreign investors, 100 per cent of the dividend on equity investment may be remitted in convertible currency. Repatriation of capital can be at a rate ranging between 20-25 per cent of the sales proceeds of the shares each year up to the limit of the total investment made in convertible currency. Considering that similar incentives are available in many other developing countries, it is yet to be seen how far they make Nepal a competitive site in view of the other constraints and disadvantages of Nepal.

1/ See later in this chapter under d (iv).

The last kind of policy measure discussed here are import restrictions. These consist in a nominal tariff of one per cent levied on machinery and raw materials for industrial purposes, excepting those which are specified as non-eligible. Furthermore, they take the form of direct bans, quantitative restrictions or higher tariffs. Such restrictions are imposed for a definite period if they are seen to be justified on economic grounds, for financial reasons or because a certain time is required for quality improvement and increased competitivness. At present the enterprises producing the following products enjoy protection in the form of import bans: laundry soap and detergents, acrylic yarn, woolen carpet weaving yarn, vegetable ghee, rectified spirit, cigarettes, biri, matches, liquor, beer, carbon paper and tin containers.

(b) Some further areas for industrial policy

Finally, two policy areas not so far dealt with are discussed here: public procurement and compensation agreements.

(i) Public procurement

By virtue of its large weight in the economy, the Government in Nepal has the ability to influence to a significant extent the volume of business going to various suppliers. The objective of most countries' public procurement policies - when they exist at all - is to buttress the volume of local demand by favouring indigenous suppliers - whether public or private - over foreign ones. Usually there are certain explicit or implicit boundaries for the extra costs judged to be tolerable in order to help embryonic local businesses in this way. The chief argument for such a policy is that local businesses will be able to circumvent some of the barriers which usually constrain them from growing if they see a reliable and predictable source of demand being brought forward. Although such public demand may not last forever - an order of school desks, for instance, is not a recurrent demand - it may last long enough to help a certain momentum develop in the local firms which win the orders.

A similar situation as that of public procurement in general prevails in the context of aid projects. Highest priority should be given to producing

locally as many inputs connected with aid projects as possible, whether financed under the HMG/N budget or aid funds.

There is scope for expansion of the local construction services as their limited capacity seems to curtail the level of HMG/N investment. Because of the small scale and scattered nature of much of the capital works in the development programme, use of international contractors is not a viable option to supplement the local capacity in most cases. Therefore, considerable efforts are made (and should be intensified) to strengthen and expand local construction services, so that the major portion of the HMG/N investment programmes can be implemented by (private sector) local contractors to which effective provision of local material inputs is of crucial importance.

(ii) Compensation agreements

There is an increasing number of countries which negotiate agreements with the larger exporters of manufactured goods to their market for achieving a certain amount of countertrade, or purchasing of parts within the host market. Thus, reference may be given to the experiences now being gained of the counterpurchase policy introduced by Indonesia in early 1982. The policy requires foreign companies winning government (non-oil) tenders to import an equivalent value of Indonesian goods or face a stiff 50 per cent penalty. Counterpurchase is also practiced elsewhere (although the Indonesia conditions of 100 per cent counterpurchase coverage and 50 per cent penalty, in particular, are probably by far the stiffest).

The degree to which this type of agreement is possible in a country such as Nepal is hard to assess. For most individual firms, sales in Nepal will represent at best a small proportion of their total business. It is conceivable that such agreements could be conducted, not at a firm by firm level, but at a country to country level. Nepal's main trading partners, and their respective shares in total imports in 1979, are: India (55 per cent), Japan (22 per cent), USA (14 per cent), People's Republic of China and USSR (12 per cent each), Republic of Korea (11 per cent) and UK (5 per cent). It may be possible for Nepal to negotiate - through government framework agreements - some exports of components which form part of some major imported items of transport or agricultural equipment or to acquire technical service and production facilities through concessional co-operation schemes.

To this end it would be useful to single out the most significant import items and make assessments as to the prospects of them being basis for compensation agreements or by-back agreements - by which imported equipment is paid for in the products produced. A particular role would be given to the Terai in this regard due to its proximity to India.

(c) General macroeconomic policies

As has been argued, explicitly and implicitly, in the preceding chapters the general economic climate is likely to be a much more important determinant of industrial development than specific industrial policies, however, well designed they might be. Consequently economic policies in general become of paramount importance. In this respect the following issues of contrasting policies emerge.

The first issue arises between the need to mobilize domestic resources for development on the one hand and the need, as stated among the objectives of the present plan, to expand demand for consumer goods on the other. Thus one could argue that the alleviation of the domestic market constraint mentioned under (a)(i) in the preceding chapter is not quite consistent with the alleviation of the capital constraint, referred to in some detail in Annex A - General economic background - except in the long run.

At present about 40 per cent of total expenditure on the public budget is being financed by foreign resources in the form of grants and net borrowing. Even if this inf ow of foreign aid is relatively modest by international standards, HMG/N is being urged to increase its efforts to mobilize additional domestic resources through increased taxation. As appears, there is a certain budget orthodoxy in this demand on fiscal policy, and it clearly, and perhaps correctly, implies that the supply of capital is a more effective constraint on expansion than the demand for consumer goods, of that public current expenditure in some area, for instance, the formation of human skills is given priority over private consumption. Either of these views may of course, be fully justified, but it is clear that the alleviation of all conceivable constraints may not be simultaneously feasible. In any case, this is an area where the policy-makers would need to decide on priorities and a course of action.

The second issue arises if none of the above supply constraints are binding, that is if it were possible to increase demand without running into supply bottlenecks. In that case it is not in the same sense a question of priorities, precisely because the domestic factors are not fully utilized. But given the precarious balance-of-payments position it is rather a question of improving the competitiveness of exports. This, however, will require lower wage costs either through direct intervention or by means of the exchange rate, and that again might have adverse consequences for the distribution of income. Given the fact that such possible consequences might be remedied through income taxation, it is tempting to conclude that current policies do not sufficiently emphasize the need for industry to be internationally competitive.

The third issue has to do with the desire to industralize and at the same time attach full importance to the agricultural development. This matter of promoting both sectors forcefully has been discussed at some length above. Given its consequences for the industrialization process one may question whether, in the current policies, enough emphasis is given to the improvement of agricultural productivity.

The fourth issue is that which exists between the importance of industrial competitiveness internationally and the actual tendency to shield domestic industries from international competition. Although it is fully recognized in the present report that the special relationship with India certainly limits Nepal's possibilities of pursuing a fully outward-looking industrialization strategy, the question may nevertheless deserve attention whether present policies are unduly and unnecessarily inward-looking.

(d) Prospects related to resource-based industrial development

After the survey of the various natural resources found in the country, it is appropriate to ask how far they may be used as a basis for industrial processing. Indeed, in virtually all economies it is the lead given by simple agro-processing which spurs the development of a broader-based industrial sector. It is through a systematic assessment of the agro-industrial prospects that a first step could be made towards an integrated industrial development strategy.

(i) Agro-based industries

A number of industries have already demonstrated that they face ready markets and can produce economically within the country. Sugarcane and jute are agricultural items whose output has grown relatively satisfactorily (although sugar output per hectare has stagnated since the mid-1970s). Other, such as cotton, are products identified in the current plan as meriting particular attention. In the following paragraphs some brief comments on specific projects, and the policy background against which they must operate, will be given.

Rice milling appears to have some prospects despite the recent contraction in the volume of rice grown in Nepal. One fairly straight-forward improvement, which has been proposed by the Agricultural Development Bank of Nepal, is to finance some 250 units' conversion so as to be able to have the traditional waterwheels (about 2,500 of which currently exist) to power rice hullers. At other sites rather more sophosticated machinery could also be powered in this way.1/

Tea: The discussion of tea in Chapter II noted that demand is picking up quickly, and is forecast to double, roughly speaking, in real terms between 1980 and 1990, but that domestic output supplies only about one quarter of demand. In order to meet the growing demand, plans have been drawn up by existing public sector and private sector tea estates to produce approximately 3,400 tons of tea per annum. Even then there is scope for additional production to meet domestic needs. Further, the possibility of establishing additional tea estates in the hills of the Eastern Region to cater to the world market needs to be carefully studied. Tea cultivation in the steep hill slopes would not be to the detriment of other crops and would also help prevent soil erosion of the hill slopes, a serious problem in the region.

Malt: Given that beer consumption in Nepal appears to be growing briskly, the possibilities for setting up plants to produce related or complementary goods such as bottles, caps and malt should be explored. At current levels of consumption, about 200 tons of malt per year would be required as an input.

Sugar: A considerable amount of Nepal's sugar crop can be milled within the country industry, with the white crystal sugar producing units particularly prone to excess capacity. However, the sugar grown in the Tauthar area of the country is currently being transported across the Indian border for processing, and a proposal to build a further plant within Nepal has therefore been made. A sugar refinery, costing $11.2 million, is one of the projects included in the list of projects presented at the Nepal Aid Group meeting in Paris in December 1983 and at

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1/ World Bank. 'Nepal: Issues and Options in the Energy Sector', August 1983.

the forthcoming Nepal Investment Promotion Meeting.[1/] The refinery wold have a daily capacity of 1,500 tons.

Apple and orange processing: At present local consumption patterns are not such as to offer much demand for dried apples. The only prospects would be if demand patterns changed appreciably or if export markets could be found. However, these circumstances are rather too remote in the context of allocating hard-won foreign exchange and other resources needed to set up processing equipment. Processing fresh fruit does seem to offer rather better prospects, however, as the following illustrative comments testify, based on the findings of a study of the Mustang fruit growing area, carried out by UNIDO/UNDP in 1981[2/]:

- Because they are mostly in their early fruit-bearing years, the trees in the area studied yielded a large volume of good quality fruit.

- Especially for apples, supply was, at the time of the study, beginning to outstrip local demand.

- Turning some fruit into alcohol, such as brandy and rakshi, would seem more promising than apple juice or cider, both of which incur problems in the shelf-life of the produce and in attaining necessary hygiene standards.
- The area studied was inaccessible (there is no road within seven days' walk) and had no electricity source. Local management capabilities were limited.

To the extent that the results of this study can be taken as being typical of fruit processing prospects more generally, the follwoing comments could be made:-

- Assistance in explaining procedures is still needed. For instance, the Mustang area study found that there was little awareness of how to harvest so as to minimize damage to the fruit. Storage tended to be inept so that wasteage was high.

- There seem to be many unrecognized opportunities for related processing and manufacturing. For instance, as the apple trees grow each year, longer ladders are needed, and the UNIDO study team was told by local observers that imported aluminium ladders might be needed. Wooden ladders, built entirely from locally available materials, might be used instead, and would seem to offer an ideal beginning to local agricultural spinoffs.

- Marketing the resulting fruits is plainly a severe problem, with the produce being perishable and mule carriage, human porterage and other

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1/ The Nepal Investment Promotion Meeting organized in co-operation with UNIDO, to be held in Kathmandu in June 1984.

2/ "NEP/80/002 - Fruit Processing in Mustang". Report prepared by W.J. de Boeck, JPO (UNIDO) and R.S. Mahat, UNDP, Kathmandu, November 1981. See also the reports on 'Assistance in the Improved Packaging and Transportation of Apples from the Mustang District' by the UNIDO-expert Philp J. Turner; terminal report, 30 December 1982 and technical report 8 February 1983.

means of transport being unreliable and slow. Evidence seems to point to those growers who take the initiative to travel in search of new markets, eventually often sell at a below break-even point because of poor market knowledge, intimidation by the unfamiliar surroundings, or a desire to return home as quickly as possible.

- Although no comparable study of the propspects for sales of fresh oranges has been carried out, it is felt that high quality oranges from the country might enjoy good sales prospects. Once again, however, the issues of cultivation, transporting and marketing are the key ones. To the extent that they can be solved - or at least partially mitigated - for one fruit - apples, say - there may be scope for having this experience taken over by others in other areas and types of cultivation.

Jute: Forecasts of domestic demand for jute point to Nepal becoming a jute importer by the middle of the decade unless further plants are established. It would thus be useful to explore the prospects for further capacity. At the same time, and above all, attention should be given to the importance of providing adequate support to the jute farmers in order to reverse the present trend of diminishing jute production (see Chapter II above).

Cotton: Rapid increases in cotton output are forecast in the Sixth Plan. The main intention is that this cotton should be an input to the Hetauda public-owned textile plant. Furthermore, one of the projects proposed for the Nepal Investment Promotion Meeting is a cotton dyeing and printing plant with annual capacity of 1,500 million tons of yarn per year, 3.6 million meters of cloth dyeing and the same capacity of printing. Its investment cost would be $2.64 million. Also proposed for the Investment Promotion Meeting is an integrated textile mill, costing $20 million, with an annual capcity of 5 million meters of cloth.

The issue which has been raised several times in the discussion of textiles in Nepal is interruptions in the supply of raw materials such as wools and cotton.[1/] A factor which should therefore be borne in mind when contemplating these two projects is the need to ensure that neither lies idle while there is a shortage of inputs. Both plants have too high a capital cost - and implied opportunity cost in terms of other projects foregone - for underutilization on the scale seen elsewhere to be tolerable.

Another proposal for the Investment Promotion Meeting is a readymade garments plant costing $200,000 to establish. While it is certainly the case that Indian garments are favoured by Nepalese consumers and that an *a priori* gap exists for import-substitution, the same comments about supply of cooperant inputs, and about the need to ensure that the plant can make goods which will appeal in the market place, apply here. The export potential, however, may be the main attraction of the proposal.[2/]

1/ "Demand Study on Cotton Yarn in Nepal", ITC research study prepared by the Centre for Research, Kathmandu, November 1982.

2/ See also "A Study on the Readymade Garment Industry in Nepal", ITC Research study prepared for TPC by Centre for Development Research, Kathmandu, April 1983.

Leather: Two projects in leather shoes and leather goods and in leather tanning have been proposed for the Investment Promotion Meeting. These projects, with investment costs of $1.39 million and $0,73 respectively, are planned to yield 300,000 pairs of shoes per year and 350 hides and 525 goat skins daily. Points to bear in mind here, which have arisen in the earlier chapters are:

- Existing leather shoe capacity has often been under utilized because, when funds allow, many Nepalese prefer the style and other characteristics associated with imported shoes.

- India has a well-established leather and shoe industry. Will a significant portion of the proposed plants' output be expected to be marketable in India?

- To the extent that exports to countries other than to India are anticipated, will these shoes and leather goods items be sufficiently well-made and attractively presented to overcome the substantial shipping costs that will be incurred in moving them?

Animal feed: This is another area in which forecasts of domestic demand suggest that the country will become an importer by the mid-1980s unless further domestic capacity is established. Plants to yield more carcass products (bonemeal, meatmeal, and tallow) have also been proposed as they would augment the very small proportion of total demand currently being met by domestic output.

The above plants have several fairly obvious points in common:

- They all are intended to use agricultural produce as their main input

- They are also intended to foster related processing activities, for instance in handling, packaging, distribution, warehousing, etc

- They should enhance the markets facing smallholders and other farmers when they come to sell their produce.

These are laudable enough aims, but the earlier chapters also noted a number of recurring obstacles to these aims being fully achieved:

- Uncertain supply and volatile quality of farm output

- Shortages of other inputs and spare parts, so that food processing plants suffer grave underutilization

- Lack of foreign exchange periodically interrupting supplies for farmers and those who process their output

- Even when goods are being regularly produced, they face stagnant demand, due to low income elasticities of demand, or due to tastes channelling demand to imports.

- It is not easy to facilitate entry into an occupation which has for centuries had its own ways of doing business, customs regarding client relations and even methods of selecting new entrants to the business. What outsiders may see as unsophisticated market trading has usually, in studies all over the world, turned out to be complex and subtle.

- The history of agrarian development the world over is the history of farm marketing boards which have acted less than consistently in the interests of farmers. The internal terms of trade, or the ratio of the prices of the output of the rural sector to that of the urban sector, broadly speaking, have tended in practice to suit urban interests far more than rural interests. Thus, there are very real concerns over the idea of instituting farm purchasing boards as a way of giving farmers price incentives to grow and sell more produce. They are too readily manipulated as monopsonists which can be used to give urban dwellers the illusion of stable farm prices at the long-term cost of lower output.

- As the events of mid-1983 showed, farmers, even in the Terai, are highly prone to drought. There is simply not the irrigation, fertilizer distribution system or extension help necessary to stave off periodic diasters. This implies that the country's exports will tend to be volatile to a degree which will make them less attractive to overseas traders who naturally prefer stable and dependable sources of supply.

- As far as exports are concerned, jute goods, cotton textiles and sugar cane are all items in which international trade has been growing slowly in recent years, both for reasons of income-elasticity of demand, and because of complex institutional arrangements which circumscribe access to many foreign markets.

Bearing in mind these points, the projects listed above should only be considered seriously when the prospects for avoiding the difficulties just enumerated have been thoroughly considered.

(ii) Forest resource-based industries

The prospects for industrialization based on Nepal's forestry resources have taken a turn for the worse since the area under wood began contracting. In a phenomenon common to many parts of the world, Nepal's forests began to be eroded as more and more people looked to fuelwood as an energy source and as over-grazing by the animals kept by small-holders impoverished the grasslands. This process is, moreover, likely to continue and even to become worse, as the lack of other sources of energy accessible to most Nepalese means that gathering wood is their sole energy means.[1/] Nonetheless,

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1/ Nepal: Issues and Options in the Energy Sector, World Bank, August 1983.

forest-based goods are attractive as a basis for processing for a number of reasons:

- It can be carried on seasonally, when other farm work is less pressing
- Other locally available raw materials such as bamboo, and reeds can be used as cooperant inputs
- Relatively little fixed capital equipment is needed
- Skill levels for certain goods are not high.

There are, however, certain constraints at present to further expansion, namely:

- The local market for handwork and even basic furniture is thought by some observers, among them a World Bank project team writing in late 1981,[1/] to be near saturation. Clearly, as income per capita grows in Nepal so too will furniture demand, but in the short-term any rapid boost to demand would have to come from abroad.
- The value to weight ratio for heavy items such as desks or dressers is low: this rules out air transport entirely and brings into question the feasibility of rail travel. New skills will have to be aquired to produce knockdown furniture.
- Furthermore, India is not short of skilled wood-workers and has resonable wood resources. For Nepalese firms to be able to export consistently to India they will have to be able to offer something demonstrably better, significantly cheaper, or very different from what is currently available there.
- Light objects such as baskets, lamp shades and mats overcome the above problem only to run up against arother: that of established low-cost competition from producers in the Philippines, China and elsewhere.

(iii) Water power resource-based industrial development

The issues involved in considering electricity as an input to industrial development in Nepal can be considered under the following two headings:-

- Is the power available in sufficient volume and at a sufficiently low price for an energy-intensive industrialization strategy, as practiced in certain Middle East states or the Pacific North-West of the USA?

1/ Nepal - Cottage and Small Industries Project, World Bank, 1981.

- What are the prospects for mini-hydro plants, especially in the widely-dispersed cottage businesses which are so crucial for Nepal's output?

The basis for an energy-intensive industrialization strategy does not appear to be very promising, for to make use of this power would entail carrying into Nepal extremely heavy raw materials (such as bauxite, or continuous supplies of timber). This is scarcely feasible. Moreover, it appears that - for the present, at least - the quality of the power which is delivered is not up to the needs of big capital-intensive installations. Power surges are but one of the problems with the existing facilities.

The second point, the prospects for mini-hydro plants look better. Obviously they too are not devoid of drawbacks. Power can be yielded at relatively low capital cost - $1,000 per KW of installed capacity - and of course this power can be made available over a widely dispersed area. The actively pursued programme of development of mini-hydro plants has been dealt with in Chapter II above.

(iv) Small- and medium-sized factories in metal-working and engineering and mineral resource-based industries

Bearing in mind that, as was stated in Chapter II, metal-working activity plays only a relatively minor - although important - part in the economy of Nepal, this section looks at the situation in the country's small metal-working and engineering factories[1/] and then discusses the prospects which might face new plants in that part of the economy.

General engineering workshops is a broader category of typically larger operations. These units can offer a relatively broad range of products, such as agricultural implements, suspension bridge parts, roof trusses, sluice gates, water turbines, solar water heaters and so on. The more notable of these units currently operating are listed by region below:

1/ See also (i) UNIDO study in 1979 by W.D. Scott and Co., "Nepal - Assessment of Existing Mechanical Workshop Capacity and Projections for its Expansion", UF/NEP/78/108, and (ii) "The Capital Goods Sector in Nepal - Present Position and Prospects", undated working paper by Koichi Niitsu, Keiichiro and Yasuko Wachi, Technology and Employment Programme, ILO, Geneva.

Central: Balaju Yantra Shala (P) Ltd
Neconeco Industries
National Structural and Engineering Co
National Engineering Works
Hetuada Engineering Works
Agriculture Tools Factory (Birgunj, public sector company, established in 1969 with USSR aid)[1/]
Himal Iron and Steel

Eastern: Biratnagar Workshop
Shanker Iron Works
Dharan Industries

Western: Butwal Engineering Works
Godar Engineering Works
Shrestha Engineering Co

A further engineering workshop has been recommended for consideration at the Nepal Investment Promotion Meeting.[2/] It may be borne in mind that there are certain evident gaps in what Nepalese metal-working and engineering shops, of whatever scale, currently offer consumers. The discrepancy between Nepalese consumption of manufactures imported from India and produced indigenously was commented upon earlier. Among the items which are in everyday use and embody relatively little in the way of high start-up costs and capital maintenance are bicycles and small tractors. Bicycles in particular would seem to offer a useful niche for one or more of the more advanced engineering shops to move into. At present the bicycles in use are imported from India and China. The viability may be looked into of a possible stage-wise building up of such an industry starting initially from assembling, possibly in technical collaboration with India or China.

It is recognized, however, that manufacture of products like bicycles or small tractors requires a fairly broad range of inputs of which a larger

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1/ See also "Demand Study on Agricultural Tools and Implements in Nepal" ITC research study prepared by the Centre for Development Research, Kathmandu, November 1982.

2/ Organized in co-operation with UNIDO, to be held in Kathmandu in March 1984.

portion may not be possible at this stage to produce in Nepal. It may therefore be important, in the short-term at least, to think in terms of less complex areas, such as the following, for new projects:

- Hand tools, domestic production of which constitutes only about 20 per cent of apparent consumption. This is a line of goods in which all the parts can be locally supplied, and, if they are sufficiently well-made, there may be export prospects. It should be noted that existing hand tool and agricultural tool plants have encountered several difficulties, however.1/

- Wire nails and barbed wire. These items are again relatively straightforward products for an embryonic metal processing sector. At present most of the approximately 1,640 tonnes per year consumed in Nepal is imported.

- Screws, bolts and nuts. There are already in production throughout the country, but imports persist. Provided production to sufficient tolerances can be achieved there should be scope here for further import substitution. Close analysis is, however, required in this very complex line of production.

- Galvanized iron pipe fittings. At present most of the 600 tonnes per year consumed comes in the form of imports from India. Here too some extension of the products offered by metal working units could allow further import substitution.

- Builder's hardware (house fittings) for which there is a yearly demand of about NRs. 1,2 million.2/

- Storage and other equipment used in fruit and crop processing. Rural engineering enterprises should be able to identify soonest opportunities here.3/

For the manufacture of the above listed products it is essential to ensure adequate production capacities in foundry, electroplating and galvanizing facilities to provide satisfactory supply to the relevant factories.4/ The market for cast products reflects the embryo state of

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1/ UNIDO, "Country Study Reports on the Rice Mechanization Machinery and Implements Manufacture..." ID/WG.142/6.

2/ Industrial Sector Plan Study 1980/81-1990/91, ISC, Kathmandu, 1980.

3/ UNIDO, "The Scope for Rural Engineering in Nepal", NEP/FR/JPO.80/1, August 1980.

4/ HMG/N is placing high priority on the establishment of a Light Engineering Industries Complex with the objective of providing assistance to the private sector, both domestic and foreign, to carry out ventures in the light engineering industry field.

industrial development in Nepal. The tonnage of castings required between 1980 and 1985 has been estimated to about 2,000 per annum, excluding spun iron pipe. Spun iron pipe demand could amount to an additional 2,500 tons (although this would not be sufficient to consider setting up pipe making facilities in Nepal.[1/] Most of the raw materials needed in a foundry in Nepal must be imported from India or elsewhere. While there may be indigenous raw materials in Nepal, with the exception of silica sand they have yet to be identified and commercially exploited.

In an effort to show how best to produce high quality castings in the local circumstances, UNIDO has assisted in the establishment of a pilot and demonstration foundry outside Kathmandu.[2/] The purpose to the project is that of assistance in Nepal's efforts at import substitution so that fewer castings have to be bought from Indian firms. The foundry is now operational on trial basis and approaches have been made by other industries in the country regarding manufacture of spare parts, such as for the textile industry, or parts for water systems. One area of particular concern regarding the project is the limited supply of raw material, such as pig iron and scrap. It has been suggested that further assitance be provided in relation to collection and processing of metal scrap.

Further consideration is also given to the possibility of establishing a small-scale iron and steel project, whereby reference is made to the feasibility study undertaken in 1978 by the consultant firm Dastur and Co.

The establishment of a small steel plant to provide the necessary billets for effective operation of the country's two re-rolling mills[3/] producing rods and bars would eliminate the total dependence of these mills on imports.

1/ Feasibility Study on a Foundry Industry (SM/NEP/75/005) by Brian Barrett, UNIDO Foundry Expert, February 1977.

2/ "Pilot and Demonstration Foundry Project" (NEP/79/001).

3/ One is a small steel rolling mill located at Parwanipur, Birgunj, with an annual capacity of 20,000 tons. It produces mild steel rods for construction uses, but the problems it faces in procuring the raw materials have caused the plant to operate at less then 30 per cent capacity. (Another mill with a capacity of 10,000 tons is presently shut down due to lack of raw material.) The present billet rquirement is about 35,000 tons.

There is a large number of auto repair workshops operating in urban areas. These workshops concentrate on the reconditioning of engines for buses, tractors, cars, diesel engines and farm machinery. They tend to be reasonably profitable. Usually auto repair workshops fill out their work schedule by undertaking partial fabrication, repair and services of agricultural equipments and industrial machinery. Some of the prominent workshops are:

- Balaju Auto Works, Kathmandu
- Dital Auto Works, Kathmandu
- Soorya Auto Mechanical Works, Kathmandu
- Technical Training Institute, Kathmandu
- Ratna Motor Works, Biratnagar
- Norang Auto Works, Biratnagar
- Butwal Training Institute, Butwal
- Chowdary Automobiles, Butwal.

The workshops may have prospects for gradual build up of various product lines. Only the first-mentioned workshop, Balaju Auto Works, also constitutes a fabricating unit, making auto ancillaries, such as bolts, washer, rubber gaskets and other minor spare parts.[1/]

Several electrical goods projects are under consideration.[2/] The two smallest would produce electric meters, perhaps around 40,000 annually, at a capital cost of $420,000, and electric power capacitors and condensers. Some 12,500 capacitors and 37,500 condensors would be produced each year, it is envisaged, with an initial capital investment of $410,000 being needed. These plants would then grow hand-in-hand with the country's electricity supply industry as it develops. Other projects here include a 50,000 unit per year electric fan plant, whose start-up capital is put at $1.1 million; a GLS electrical lamp plant, capable of producing 18 million lamps per year, at an initial capital cost of $720,000; and a transistor radio plant. The latter would produce up to 45,000 transistor radios sets each year. Its start-up capital is estimated at $520,000.

1/ See "Demand Study on Automobile Spare Parts", ITC research study prepared by the Centre for Development Research, Kathmandu, November 1982.

2/ To be taken up at the Nepal Investment Promotion Meeting in June 1984.

The lamp and the radio plant would entail some fairly elementary form of mass production set-up, although it is conceivable that a batch operation could work as well, particularly if the output of the plants is to be fairly heterogenous. If a production line or assembly line system is to be used, it is important to recognize in advance that this requires labour which is available to work at the task all year round. Thus the location of the plants should be chosen with year-round labour availability in mind.

Other projects are related to the zinc and lead mining in Nepal and the potential for vertical integration into battery production from there. A 4,500 unit per year wet-cell battery plant has been suggested, at a capital cost of $460,000 to meet this potential. Consideration has also been given to the possible establishment of dry cell battery production unit with an annual capacity of 12 million pieces.1/

Three further projects are intended to make use of the minerals deposits in Nepal. First, there is a 12,000 diamonds per day cutting plant, which would cost about $1 million to establish. There is a 3,600 tons per year bottles and jars plant, costing $1.46 millions and an integrated stone cutting plant which is expected to have an annual throughput of 100,000 cubic metres per year. This would cost $1.16 million to set up. Of these the diamonds project would have export potential. It would also be the one which would require the most skilled labour.

In fostering the further development of the buildings materials industry, including bricks and tiles making (and in support of local construction contract work, including ODA-linked activities), there is a need for the provision of buildings materials research, standards, quality control and technology services.

(e) Very small or cottage-based industries

A few cottage-based occupations are well-established by now. Among the better-performing units are those in carpet-weaving, cotton handlooms, garments and certain sorts of metal crafts. The problems facing these operations can best be put into three headings, namely:

1/ Industrial Sectoral Plan Study (1980/81-1990/91), ISC, Kathmandu, 1980.

- obtaining inputs, often from abroad, regularly and at prices a close as possible to world prices (bearing in mind unavoidable transport costs);
- selling in unprotected markets
- financing the often long cycles of business.

As regards the first of these points, traders have been documented as having problems with import regulations and with the relatively concentrated nature of the import trade itself, whereby only a few dealers sell to most Nepalese customers. A critical constraint lies in wool inputs. The carpet producers surveyed by a World Bank team in 1981[1/] persistently faced difficulties getting Tibetan or other wool on time from China, under barter trade. A private sector company has been formed to develop existing supply routes and look for other wool sources. Parallel with this, the authorities may look into the possibilities of establishing long-term, stable supply contracts with China.

A variant on the same problem which faces handloom workers is that when the flow of imports is getting tighter, prices for the remaining supplies rise, so that the whole cost basis of the handloom production is undermined.

Metal workers find similar problems as the supply of indigenous scrap dries up and they are obliged to look outside the country, or to traders. As in the case of woollen goods, official policy is allowing traders to form their own importing company, under the auspices of the Nepal Handicrafts Association, to buy metal in bulk from overseas. It is anticipated that discounts, from hitherto prevailing prices, of up to 20 per cent, could be obtained once this company is vigorously operating.

The matter of selling in free markets is slightly easier for sellers of high volume items like carpets since their value to weight ratio is such as to allow them to send goods by air freight. This in turn yields them access to a wide range of potential buyers and, other things being equal, a higher price. It is estimated that for a carpet shipped by air to Europe shipping costs 20 per cent of the value of the item, as against 5 per cent if it goes by sea. For shipment to the US the figures are closer to 40 per cent and 10 per cent

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1/ World Bank. Nepal - Cottage and Small Industries Project, 29 October, 1981.

respectively. Balanced against this is the faster turnaround, with goods being received at their destination in one or two weeks as against one to three months - a not unimportant factor in financing costs for the producers.

This raises the third issue, that of the very long cycles over which money is tied up in goods in process and finished goods inventory. Up to six months has been quoted as a typical cycle time for small traders in Nepal selling overseas. Clearly the more this can be cut down - in part by trading off the expense of air freight against the quicker turnaround - the better. It is to be noted, in this context, that included in the comprehensive 'Trade Policy' of the HMG/N introduced in 1982 [1/] is provision for special arrangments to extend credit facilities to the manufacturers and exporters of export goods. One aspect which might be worth looking closer into, is the potential use in export promotion, of the 'trading house' concept, as practiced in Japan, the Republic of Korea and several southeast Asian countries.

It is very difficult to frame policies to assist the small manufacturing units, for by their very nature they are amorphous, appearing and disappearing very rapidly, tend not to employ many people on a formal cash basis, preferring family labour or work for payment in kind, and use little or no fixed capital investment. Given their nature, then, one would probably not be addressing the issues that really matter to them by running a complex system of financial assistance or loans. Indeed, evidence for many countries tends to point to the fact that one cannot readily affect the way these tiny enterprises carry out their work and instead should leave their internal workings to their own discretion. What can be done, on the other hand, is to take steps to alter the structure of the markets in which they buy their inputs, sell their outputs and receive their information.

As was suggested in chapter III, a perennial problem for small and fragmented businesses lies in their dealings with traders. The very thorough study of small-scale traders in Nepal by Blaikie et al found that:

1/ Ref. 'Trade Policy', Ministry of Commerce and Supplies, HMG/N, Kathmandu, 1982.

> usually (close) to the supply of imported goods, few in number and exercising a considerable degree of monopoly power, the larger wholesalers of imported goods dominate the more numerous but unorganized and more vulnerable retailers, often maintaining the unequal relationship through the establishment of credit arrangements which tend to tie the retailers to them, while the smaller traders and shopkeepers struggle to escape from such ties.1/

Elsewhere they found that what was true for the supply of imported inputs was equally true for selling finished goods for export and for sale elsewhere in Nepal itself. Thus the trading structure is a key area upon which policy could be brought to bear in assisting the entry of more traders and diminishing the monopoly power of those who currently operate. Among the measures which would work to this end would be setting up trade fairs within Nepal and having them travel through the country. The government had also backed up a policy of road-building so as to allow small-scale producers easier access to a wider range of buyers and sellers, although, at least in the opinion of one study,2/ this objective was not satisfactorily met. Rural blacksmiths - of whom about 4,000 are estimated to exist - have been the subject of a proposed assistance project from UNIDO.3/ The elements which this plan would contain would be:

- a rural engineering service to assist product innovation and development
- some rural credit schemes
- training.

The above elements do appear to confront the main stumbling-blocks to further development by cottage-based entrepreneurs, since they attempt to improve the conditions under which goods are sold and not just the efficiency with which they are made.

1/ P. Blaikie et al, op.cit.

2/ P. Blaikie et al.

3/ UNIDO. Draft Project Concept "Engineering and techno-economic up-grading of the rural blocksmithy in Nepal" February 1981. See also W.J. De Boeck, JPO (UNIDO), "The Scope for Rural Engineering in Nepal", UNDP, Kathmandu, 7 August 1980.

Chapter V

CONCLUDING OBSERVATIONS

In 1980 two observers on Nepal expressed the hope that "the next decade witness the substantial economic growth that has so far eluded the state-dominated economy".[1/] Until the beginning of 1984, however, three sets of factors have been at work to prevent the economy from flourishing, namely:

- slower economic growth world wide during the 1981/83 recession, hampering exports and the growth of demand generally;
- disastrous weather in Nepal;
- no clear resolution to the many obstructions to faster growth in Nepal itself.

In the study, efforts has been made to systematically analyse the economic prospects and constraints. Firstly, the slow growth of industrial output was noted. It was, however, also recognized that since most of those involved in processing or other forms of manufacturing undertake their work outside formal or official channels which would readily be counted, a lot of Nepal's industrial activity is bound to go unnoticed.

Secondly, stock was taken of the raw materials within the country. It was observed that there are relatively few which offer immediate and straight-forward projects for further processing. The particular difficulties confronting the country's forestry and water resources - two often cited as being natural stating points for a resource-based industrialization strategy - were discussed.

Thirdly, the chief constraints to further industrialization in Nepal were appraised and a discussion held of the issues currently exercising the minds of those involved in setting policy for industry in Nepal. The problems of achieving any significant industrial growth without a rise in marketed agricultural output taking place at the same time were stressed. For several reasons the key to a considerable expansion of industry lies in agriculture.

1/ Leo Rose and John Scholz, Nepal: Profile of a Himalayan Kingdom, Westview Press, Boulder, 1980.

First of all, an increase in agricultural productivity is a prerequisite for releasing manpower on a large-scale for industrial employment. Second, an increase in agricultural productivity is necessary in order for the agricultural sector to provide the inputs for an agro-based industry. And thirdly only with such an increase in productivity will the domestic market for industrial products be able to grow.

The particular difficulties posed by the country's geographical position were also noted. The latter factors have particular importance for strategies of export-oriented labour-intensive processing and manufacturing, since only items with a high value to weight ratio can be shipped out of the country by air, and there are few obvious prospects for that which are not already adequately supplied for instance by firms in neighbouring India - given the considerable difficulties for Nepal to create and maintain a sufficient competitive edge in terms of price and quality.

Given the constraints facing industrialists, small producers and landholders in Nepal, it stands to reason that policy makers too confront a difficult tasks. Nonetheless industrial policy is being debated and pursued in practice, as the lengthy discussions on industry in the Sixth Plan for 1981-1986 indicate. It has therefore been attempted in the report to identify what is most important in the economy for planners to bear in mind when thinking about policy at the highest level and also when selecting individual projects. In this context a number of specific proposals, along with their strengths and weaknesses, were discussed.

The points which tended to arise time and time again in the study were:

- Policy for small producers, be they in cottages or small factories, is hard to implement because of the very nature of the intended clients. It is likely that the most effective and efficient policies will be those that try, not to affect the way these enterprises do things, but the structure of the markets they face when thy buy their inputs and come to sell their output.

- There is little point in planning for new processing capacity if the price structure is not in place to provide adequate incentives to small-holders to grow increasing amounts of raw material. This is a simple, but often overlooked, point As the apple processing study showed, a great deal of assistance can be provided even on relatively rudimentary matters such as cropping and growing techniques, and how to store produce.

- More hydro-power inputs could be provided at relatively little cost by the government supplying more mini-hydro plants and at the same time interfering less in small-scale providers of power, who might be allowed to sell power to whomever they wish.

All in all, on basis of the preceding analysis and discussion, consideration may be given to the benefit of action along the following lines:

- Economic policies: The overriding importance for Nepal's industrialization of the country's general economic polices and growth is recognized and evident. Thus effective development in agriculture may have greater impact for the industrialization process than direct measures of support to industry.

- The question of protection: There is a need for a detailed analysis of ways and means to rationalize protection and, especially, to examine the possibilities of a gradual reduction of the protection as and when economically justified. A more systematic monitoring of imports will need to be undertaken; it being recognized that certain selected product lines may need to be given continuous support and protection. Moreover, in step with the changes in the relative price level following such more outward looking policy, reassessments of the cost-benefit ratios of existing and potential resource-based industrial project and project opportunities should be undertaken.

- Adjustment support: Such a possible re-orientation of policies may need international support in the form of restructuring loans from multinational lending institutions, and is likely to require a more deliberate and effective use of the exchange rate. Furthermore measures in direct support of exports such as trade impact centres and subsidies of transportation costs should be considered.

- Tax system: An improvement of the tax collection system is important not only from the point of view of mobilizing domestic resources, but also to enhance the effectiveness of current tax incentives.

The report may also constitute a basis for a programme of action which may include a number of the concrete suggestions put forward in the paper regarding follow up investigations and in-depth assessments in the case of specific subsectors of industry or identified potential project opportunities as well as further analyses which may be undertaken on specific policy issues or support measures.

Consideration may be given to the preparation of a "white paper" presenting in a coherent manner these actions (as well as possible further actions of similar nature, the need for which may emanate from the Investment Promotion Meeting in Kathmandu in June 1984). The preparation of such a "white paper", or programme of action, might be particularly timely at this

stage before the detailed preparatory work for Nepal's Seventh Development Plan has commenced.

A follow up programme could be conceived comprising a national workshop on industry in which senior government officials and representatives of Nepalese industry would take part together with UNIDO research staff and international experts for the purpose of drawing up detailed proposals for a possible "white paper" and a programme of specific analyses required to substantiate various findings and obervations in the present study report. The workshop would also be expected to provide support and guidance for a monitoring which might be instituted , of the effect of the various policies and policy measures, in particular in the context of international trends and development in selected industrial sectors of particular relevance. Above all, the workshop would provide an opportunity for a dialogue between the policy-makers in Nepal and its industrialists on the one hand and international industrial development specialists on the other.

The Nepalese authorities have, in their various planning exercises and machineries, shown themselves willing to pursue their industrialization objectives tirelessly. It is in an effort to assist this effort of the imagination - the resource which Nepalese entrepreneurs will have to rely upon to the utmost - that this paper has been written. It may also be seen as a contribution to the iterative process of identifying industrial growth potentials and formulating supporting policy proposals, as well as an aid to the decision-making process in its search for new strategies and policies.

Annex A.

GENERAL ECONOMIC BACKGROUND

(a) Population, GDP and domestic capital formation

The Himalayan Kingdom of Nepal covers an area of 141,059 sq. km., surrounded by China in the north and India in the other three sides. Most parts of the country consist of rugged terrain with 42 per cent of the land covered by mountains, 30 per cent by hills and 28 per cent by a tropical low land zone, the Terai. The topography and the rising population (now close to 15 million persons) have created population pressure in the hills and the terai which have 48 and 44 per cent, respectively, of the total population (Table A.1).

Table A.1. Share of population by topographical regions, 1981

Regions	Share of Nepal's population (%)	Urban share in population (%)	Averge annual growth rate of population, 1971-81 (%)
Mountains	8.7	-	1.26
Hills	47.8	6.4	1.66
Terai	43.7	6.3	4.20
Total	100.2	5.8	2.65

Source: Employment and Development in Nepal, ILO, Bangkok, 1982

In 1980, only 22.2 per cent of the total land area was under crops, while forest covered 29.1 per cent. 15 per cent of the land was under perpetual snow and 18.1 per cent was waste land. Of the remaining, 29.6 per cent was pasture land while 2.8 per cent was under water. The land distribution of the country highlights the ruggedness of its topography.

The rate of population growth - currently 2.65 per cent per annum - has been continuously increasing since the 1940s. Recent projections indicate the expected rise of the total population by the year 2000 to about 23 million (see Table A.2). Population density per unit of arable land is very high -

1,500 persons sq.km in the hill areas where most of the population lives. Population pressure has reduced the average size of individual family land holdings to less than 0.4 hectare and, furthermore, as a result of a reduction of grasslands, forests are being depleted rapidly as alternative sources of fodder and for firewood and timber. Below subsistence conditions in the mountain and hill areas have for many years led to migration to the better endowned Terai plains, leading to wasteful forest cutting there. Soil erosion has become one of the country's most critical problems.

Table A.2. Population and labour force projections, 1980-2000

(In millions)

	1980	1985	1990	2000
Total population	14,2	16,2	18,3	23,2
Total labour force	6,8	7,5	8,5	10,9
Male	4,1	4,6	5,2	6,7
Female	2,7	2,9	3,3	4,1

Note: National data have been adjusted to a standard concept of labour force, defined to comprise all employed and unemployed (work-seeking) persons. It includes self-employed persons and unpaid family workers.

Source: Labour Force Estimates 1950-1970 and Projections 1975-2000, ILO, 1977

Underemployment is a major characteristic of the economy. In 1976, underemployment in the rural areas was estimated at 63 per cent of total working days. The problem was less marked in the urban areas where underemployment was estimated at 45 per cent of total working days. Open unemployment is not yet a major problem in Nepal - 5.6 per cent of the work force was registered as unemployed in 1976.

Agriculture is the main occupation of the people, supporting almost 90 per cent of the population (see Table A.3). In comparison, the manufacturing sector accounts for less than one per cent of the formally employed labour force. Agriculture contributes nearly 60 per cent of the gross domestic product. The GDP in 1979/80 (at constant 1974/75 prices) was NRs 18,622

Table A.3 Economically active population, grouped by activity, 1976

(In thousands)

	Persons engaged	Percentage distribution
Agriculture, forestry and fishing	5,572	89.9
Mining and quarrying	-	-
Manufacturing	42	0.7
Electricity, gas and water	2	-
Construction	5	0.1
Commerce	283	4.6
Transport and communications	6	0.1
Finance and community service	280	4.5
Total	6,1980	100.0

Source: Central Bureau of Statistics, HMG/N, Kathmandu.

million and per capita GDP NRs. 1,279. The GDP has been growing at a very slow pace, 2.2 per cent per annum during 1975-1980, which is lower than the population increment rate of 2.3 per cent during that period. Industry (manufacturing and cottage industry combined) contributes only 4 per cent of the GDP (see Tables A.4 and A.5).

Gross fixed investment has been increasing from 10.4 per cent of GDP in 1975/76 to 13.8 per cent in 1979/80, a growth rate of around 15 per cent per annum. The domestic savings gap, that is investment minus gross domestic savings, amounts to about 6 per cent of GDP and is, however, expected to widen somewhat over the coming years. The investment/GDP ratio is expected to increase to about 17 per cent during the present plan period.

Gross fixed capital formation in 1979/80 was around NRs. 3,215 million of which about 44 per cent was in the government sector and the rest in the private sector (Table A.6).

(b) Foreign trade

Given the geographical setting of the country, India is the largest trading partner with Nepal. But Nepal has been successful to a large extent

Table A.4. Gross Domestic product, 1974-80

	1974/75	1975/76	1976/77	1977/78[a/]	1978/79[a/]	1979/80[a/]	
	(In million NRs, at current prices)						(%)
Agriculture, including fishing and forestry	11,435	11,495	10,389	11,616	12,118	12,782	57.3
Mining	22	23	26	25	27	28	0.1
Manufacturing	440	459	499	531	542	553	2.5
Cottage industry	224	231	237	263	274	282	1.3
Construction	583	718	1,020	1,336	1,494	2,092	9.4
Electricity, gas and water	34	38	39	42	48	52	0.2
Transport, storage and communications	690	805	852	1,093	1,306	1,767	7.9
Trade, resturant and hotels	540	603	636	707	789	996	4.5
Finance, insurance and real estates	1,095	1,171	1,412	1,534	1,785	2,198	9.9
Services	873	1,046	1,145	1,277	1,350	1,555	7.0
Public	(648)	(811)	(901)	(989)	(1,055)	(1,160)	(5.2)
Private	(225)	(235)	(244)	(269)	(295)	(395)	(1.8)
Gross domestic product at factor cost	15,936	16,589	16,225	18,426	19,733	22,305	100.0
Net indirect taxes	635	805	1,025	1,306	1,419	1,562	
Gross domestic product at market prices	16,571	17,394	17,280	19,732	21,152	23,867	
	(In million NRs at constant 1974/75 prices)						
Gross domestic product at market prices	16,571	17,300	17,822	18,607	19,048	18,622	

a/ Data for 1977/78 to 1979/80 are preliminary estimates.

Source: Central Bureau of Statistics and National Planning Commission, HMG/N.

Table A.5. Levels and growth rates of GDP and GDP per capita, 1974-82

	GDP at constant 1974/75 prices (in million NRs)	Annual growth rate (%)	GDP per capita (at constant prices) (value in NRs)	Annual growth rate (%)
1974/75	16,571	-	1,294	-
1975/76	17,300	4.4	1,317	1.8
1976/77	17,822	3.0	1,322	0.4
1977/78	18,607	4.4	1,346	1.8
1978/79	19,048	2.4	1,342	-0.3
1979/80	18,622	-2.2	1,279	-4.7
1980/81[a/]	19,642	5.5	1,315	2.8
1981/82[a/]	20,394	3.8	1,331	1.2

a/ Preliminary estimates

Source: Central Bureau of Statistics, HMG/N, Kathmandu.

Table A.6. Domestic capital formation,[a/] 1975-1980

(In million NRs, current prices)

Year	Government	Non-government	Total	Percentage of GDP
1975/76	756.8	1,054.8	1,811.6	10.4
1976/77	905.0	1,236.6	2,141.6	12.4
1977/78	1,164.8	1,314.4	2,478.9	12.6
1978/79	1,251.3	1,635.0	2,886.3	13.0
1979/80	1,400.0	1,814.7	3,215.8	13.8

a/ Only fixed capital formation, excluding stocks.

Source: The Sixth Plan (1980-1985) Part I (Nepal Version), National Planning Commission, HMG/N, 1981, Kathmandu.

in diversifying its trade and consequently, trade with India has declined from 66 per cent in 1975/76 to 51 per cent in 1981/82. The composition of foreign trade is presented in Table A.7. Whether with India or third countries, the overall trade balance has been unfavourable to Nepal. Exports to India declined at an 11 per cent rate in real terms from 1974/75 to 1979/80; whereas imports decreased by only 2.7 per cent[1/]. The decline in exports was partly due to a fall in the exportable surplus of rice in the country. On the other

Table A.7. Foreign trade, 1974-82

(In million NRs, current prices)

	India		Overseas		Total	
	Exports	Imports	Exports	Imports	Exports	Imports
1974/75	746.7	1,475.7	142.9	338.9	889.6	1,814.6
1975/76	893.7	1,227.1	292.1	754.6	1,185.8	1,981.7
1976/77	779.6	1,343.5	385.1	664.5	1,164.7	2,008.0
1977/78	498.1	1,534.1	548.1	935.5	1,046.2	2,469.6
1978/79	650.1	1,581.7	646.7	1,303.0	1,296.8	2,884.7
1979/80	520.9	1,786.4	629.6	1,693.7	1,150.5	3,480.1
1980/81	992.4	2,179.0	616.3	2,240.2	1,608.7	4,423.2
1981/82	994.1	2,230.9	496.1	2,642.4	1,490.2	4,930.3

Source: Quarterly Economic Bulletin, mid-July 1982 - mid January 1983, Nepal Rastra Bank, Kathmandu.

hand imports from overseas have increased at the very rapid rate of 38 per cent annually in real terms in the period 1972/73 to 1979/80. Overseas exports for the period 1972/73 to 1979/80 increased at an average annual growth rate of 18.4 per cent which is higher than the performance of many developing countries. This trend has, however, been reversed for the last two years, largely due to the international recession, which caused reductions in particular in exports of jute, leather and carpets.

(c) Nepal's bilateral trade arrangements

Nepal's land-locked position has placed it in a difficult situation, in that there is no commercial access to the sea except via the Indian land routes. In order to overcome the geographical barrier of isolation, it is most important that Nepal has easy access to the Indian market and to the world market by transit passage through India.

1/ Growth rates in real terms have been computed using national price index figures provided by Nepal Rastra Bank.

The first trade and transit agreement between India and Nepal was signed in 1960. Two separate treaties on trade and transit between the two countries were concluded in March 1978. The validity of the Treaty of Trade is five years and that of the Treaty of Transit is seven years. The Treaty of Trade was extended for a further five years in March 1983. Each successive treaty has been better than the previous one as far as Nepal is concerned.

Nepal enjoys the status of most favoured nation treatment with respect to custom duties in connection with import transactions and import regulations of the Indian Government. This is stated in Article III of the Treaty of Trade.

Article V further states that the Government of India will promote industrial development in Nepal by allowing the export of Nepalese manufactured products into India and waiving quantitative restrictions and custom duty normally levied on such products.

The protocol to Article V mentions that all manufactured products containing 30 per cent or more of Nepalese or Indian materials will be exempt from basic customs duty and quantitative restrictions. The protocol further mentions that if Nepalese and Indian value added of the product is at least 50 per cent and less than 80 per cent of the ex-factory price, it will be eligible for the following preferential treatment on a case by case basis in the Indian market. There will be no quantitative restrictions unless under very special circumstances and/or there will be a concessional tariff of at least 50 per cent of the MFN rate of import duty.

A separate agreeement of co-operation with India, aimed at controlling unauthorized trade under Article III with specific reference to checking of re-exports, requires that products containing materials imported from India exceeding 50 per cent of the in ex-factory value should not be exported to third countries. Likewise products containing imports from third countries exceeding 50 per cent of the ex-factory value cannot be exported to India.

In addition to India, Nepal has also entered into trade agreements with Bangladesh, Bulgaria, China, Egypt, Democratic People's Republic of Korea, Republic of Korea, Pakistan, Poland, Sri Lanka, United Kingdom, USA, USSR and Yugoslavia. The main aim of these treaties is to diversify trade and also

promote the export of manufactured Nepalese products. Among other things, the agreements include most favoured nation clauses with regard to customs and other duties between these countries.

The on-going attempts to forge co-operation among south Asian nations initiated by Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka are of great importance to Nepal considering, for instance, the potential use of water resources for the benefit of the whole region. Integrated schemes of navigation, flood control, irrigation, and power are among those being considered.

(d) Balance of payments aspects

The extent to which the balance of payments will act as a constraint on the policy options open to planners in Nepal, and the extent to which the balance of payments stands to be assisted by various plans, merit scrutiny. The background to recent years' balances is as follows:

- Over the Fifth Plan period (that is 1975/76 to 1979/80) visible imports rose at an annual average rate of 14 per cent (in value terms) while exports rose by 5 per cent per year.

- The trade deficit has grown from NRs. 925 million in 1975/76 to NRs. 2,370 million in 1979/80. As a percentage of GDP, it has grown from being equivalent to 5.6 per cent in 1974/75 to 12.8 per cent in 1979/80.

- Unlike other countries, Nepal has not seen a massive increase in the value of fuels imports over the 1970s; in fact, between 1974/75 and 1978/79 this item's share of total import value fell from 10 per cent to 8 per cent.

- There has been some diversification as regards trading partners: countries other than India accounted for only 16.1 per cent of export value in 1974/75 but for 49.8 per cent by 1978/79. Moreover, exports to countries beyond Asia, notably in Africa and the EEC members, have grown particularly quickly.

- The size of the trade deficit with India displays considerable volatility, swinging from as little as NRs. 33 million (9175/76) to NRs. 1,058 million two years later. This is chiefly a reflection of very volatile rice shipments.

In more recent years, the trade balance has deteriorated further, as imports have continued their very strong growth. This deficit has however been offset by a sharp rise in net service receipts, up from NRs. 284 million in 1975/76 to NRs. 1,378 million in 1981/82. Net unrequited transfers have

also grown rapidly, as Table A.8 shows. Transfers from Nepalese soldiers in the Indian and British armies and grants to the Nepalese Government are the most significant factors here.

Table A.8: Balance of payments, 1979-82

(In million NRs)

		1979/80	1980/81	1981/82
A. Trade balance	-2,416.6	-2,830.2	-3,452.0	
(Exports, f.o.b.)		(1,152.7)	(1,512.7)	(1,496.0)
(Imports, c.i.f.)		(-3,569.3)	(-4,442.9)	(-4,948.0)
B. Services, net	373.2	1,117.2	1,378.0	
C. Unrequited transfers, net		1,188.2	1,417.0	1,681.7
(Private transfers, net)		(344.2)	(466.0)	(453.4)
(Government grants)		(761.7)	(360.8)	(2,157.0)
(Indian excise refund)		(36.9)	(57.3)	(40.3)
(Other government transfer receipts)	(45.4)	(33.2)	(31.0)	
D. Current account balance		-355.2	-295.9	-392.3
E. Official capital account, net		577.2	633.8	774.1
(Foreign loans)		(597.9)	(644.9)	(806.5)
(Amortization)	(-20.7)	(-31.1)	(-32.4)	
F. Misc. capital items, net		-195.6	-143.8	123.0
G. Changes in reserves, net		26.4	194.1	504.0

Source: Quarterly Economic Bulletin, mid-July 1982 - mid-January 1983, Nepal Rastra Bank, Kathmandu.

(e) The aid factor

Nepal's development plans rely heavily on external assistance and aid is therefore an important factor in the source and volumen of imports. Nepal is currently receiving aid from various international agencies and some ten bilateral sources. The larger share is co-ordinated by the Nepal Aid Group, whose members include Austria, Canada, France, Federal Republic of Germany, Japan, Switzerland, UK and USA as well as UNDP (co-ordinating UN aid), the World Bank and the Asian Development Bank. Assistance from outside the Aid

Group comes, inter alia, from India, China, Kuwait, and the OPEC Fund. The main sectors receiving assistance and agriculture, power generation, transport and social services. The disbursements of external assistance during the last few years are shown in Table A.9.

Table 9. Disbursement of external assistance by sector, 1978-83

(In million NRs)

Sector	1978/79	1979/80	1980/81	1981/82	1982/83 (est.)	(%)
Agriculture, irrigation and forestry	228	221	323	454	728	29.3
Industry and mining	31	77	70	144	230	9.3
Power	209	406	560	316	536	21.6
Transport and communications	351	502	440	459	424	17.1
Social services	172	135	170	349	568	22.8
Total	989	1,341	1,562	1,723	2,486	100.0

Source: Nepal's Development Strategy and External Assistance Needs, Ministry of Finance, HMG/N (document prepared for the Nepal Aid Group Meeting in Paris, December 1983).

Aid in the agricultural sector covers regional irrigation and rural development projects (among others World Bank and Asian Development Bank) while in the power sector it is concentrated on two major projects - the Kalekhani project (World Bank, UNDP, Japan, Kuwait Fund and OPEC Special Fund) and the Devighat project (India). Major investments in the industrial sector are Asian Development Bank and FRG-financed cement factories and the Chinese textile mill at Hetauda.

The various programmes involve substantial engineering services, as well as transport, road-building and construction supplies and equipment. Amongst the problems are the country's absorbtive capacity, the co-ordination of the numerous inputs and the availability of critical equipment and materials, due to the long supply lines.[1/]

1/ "Import Policy and Import Operations in the LDCs of the Asian and Pacific Region", study prepared by Donald C.G. Newton, consultant, UNCTAD, 1981. UNCTAD/LDC/39(Vol.II).

Annex B.

INSTITUTIONAL MACHINERY

The following paragraphs describe the operations of the main institutions which are intended to assist industrial development.

(a) Industrial planning

The institutional machinery for assisting industrial development has been expanded considerably since the introduction of planned economic development in 1956. The National Planning Commission, the central planning agency of the country, is assisted by the Ministry of Industry in drawing up industrial sectoral plans. The plans are drawn up for five-year periods and within that framework, annual programmes are prepared and budgets allocated. Sectoral plans have in the past tended to be listings of 'foot loose' industries to be promoted in the private and public sectors rather than programmes integrated with other sectoral plans. In 1980, however, for the first time, the Industrial Services Centre (ISC) draw up a 10-year master plan of the industrial sector. The study, which was an initial effort, included subsectoral objectives and strategies, which were intended to form a base for possible use in the sixth plan preparations. Notwithstanding this effort the planning capabilities of the Ministry of Industry and the Industrial Services Centre need strengthening in order to produce more comprehensive sectoral programme plans.

(b) Industrial administration

The establishment, expansion and modernization of industry are all regulated through licensing and registration. The licensing requirement has however been waived for cottage industries where the investment in machinery and equipments is below NRs. 200,000 and the investment in total fixed assets does not exceed NRs. 500,000 in rural areas and NRs. 800,000 in urban areas.

Registration of cottage industries and recommendations for various financial incentives are handled by the Department of Cottage and Village Industries. The Department of Industries is responsible for licensing,

registration and recommendations for facilities and incentives for all other types of industries. The Department is authorized to issue licenses for small-scale industries which have investment in fixed assets below NRs. 2 million. It has to refer the application for license for higher scale of industries to the Industrial Promotion Board (IPB). IPB is composed of representatives from the Ministry of Industry, the National Planning Commission, the Nepal Rastra Bank, the Ministry of Finance, the Department of Industries and specialists. Besides granting licenses, the Board functions as a co-ordinating link between different agencies involved in industrial policy and administration and is empowered to review industrial policy every five years. The licensing procedure therefore requires using the above channels, besides the presentation of a feasibility study report on the proposed industrial venture, and takes up to 90 days for completion. Moreover, it is centralized in Kathmandu because the Board sits only in Kathmandu. Considering the frequency with which recommendations are needed (see below for customs rebate, tax incentives and foreign exchange and raw material quotas) there are often considerable delays due to this centralization of authority.

Industries are granted certain fiscal incentives by the Industrial Enterprises Act of 1982. Such incentives have to be recommended by the Department of Industry or the Department of Cottage and Village Industry, as applicable, and the enterprise then has to approach the Department of Customs for import duty rebate and duty drawbacks and the Department of Excise for excise duty exemptions. The procedure is cumbersome and poorly co-ordinated chiefly because the recommending department and the approving department fall in two different ministries - Ministry of Industry and Ministry of Finance. If the privileges are meant to be incentives, implementation must be smooth and fast otherwise the policy instrument will lose its effectiveness.

Although the Department of Industry is the first contact point for every industry and is entrusted to maintain industrial statistics and monitor the performance of industries, it is poorly equipped both professionally and materially to undertake these tasks. As a consequence, the planners and policy makers do not get feedback from the industries. Such a feedback mechanism needs to be developed in the Department.

(c) Industrial promotion and non-banking services

The Industrial Services Centre (ISC) provides a package of non-banking services for the promotion of industry by disseminating information on investment opportunities, policies and procedures for industrial investment and by conducting techno-economic feasibility studies on industrial ventures. Licensing requires submission of feasibility study reports to the Department of Industries and to this end entrepreneurs often first contact ISC. ISC is reported to take on average about 90 to 120 days to prepare a study - a delay which the investors often find unduly lengthy. The detailed study document is, however, subsequently useful to the entrepreneurs for submission to commerical or development banks for loan financing. A review of ISC reports gives the impression that one area where ISC is relatively weak is in knowledge of export markets, which may be alleviated through more intensified co-operation with the Trade Promotion Centre (TPC).

Although ISC is committed to providing technical, project engineering and management consultancy services, it is lacking in these respects and clearly needs strengthening. ISC conducts, inter alia, training programmes in management areas. The programmes are well attended but the content and duration of the programmes need to be strengthened and equipment and training aids provided.

There are nine industrial estates (industrial districts) in operation in the country (see Table B.1). The estates provide land on lease and industrial buildings at nominal rents. They connect electricity and water lines to the industry. The estates have proved instrumental in promoting industries and, therefore, the establishment of more estates is being planned Table B.1.

The Cottage Industry Development Board (CIDB) which has recently been revitalized, is extending training, marketing, and raw material supply facilities to cottage industries. The Board is also soon to enter into financing activities. Its activities are presently being extensively carried out only in nine districts of the Bagmati and Gandaki Zone where a special Cottage and Small Industries Programme is under implementation through the assistance of the World Bank. Sub-sector development centres are being established under CIDB management to provide skills training and technical consultancy services to cottage industries in the field of cotton textiles and

Table B.1 Industrial estates (industrial districts). Key data

Name	Date of establishment	Total area (ha)	No. of industries in operation	Tota, no. of persons employed	Investment as of 1981 '000 NRs	
					from district administration	from industries
Balaju Industrial District	1960	35	45	2,400	23,337	77,405
Hetauda Industrial District	1963	132	24	2,482	22,912	210,300
Patan Industrial Estate	1964	14	53	1,303	6,906	16,209
Nepalgunj Industrial Estate	1973	10	15	144	6,753	6,559
Dharan Industrial Estate	1973	10	8	150	6,738	5,000 (approx)
Pokhana Industrial District	1974	25	14	491	8,795	20,928
Butwal Industrial District	1976	15	3	44	5,970	n.a.
Small-scale Industries tries Area Bhaktpur	1979	3.5	2	50	n.a	n.a.
Prime-mover Industries Project Sukhet	1981	4.6	(Under construction)			

Source: Industrial Services Centre, Kathmandu, 1983.

carpets. The Board's activities are expected to grow to encompass the whole country in due time. It needs to be properly strengthened with qualified technical manpower and equipment to make it function efficiently.

The Cottage Industries and Handicrafts Emporium is engaged in the marketing of cottage industries products, more specifically cotton textiles. It also sells cotton yarn and textile machinery to such industries through a network spead countrywide. The supply of other inputs and marketing of other products besides textiles are expected to be undertaken by the Cottage Industry Development Board.

The Nepal Bureau of Standards is entrusted with quality control and certification. So far the Bureau has set up standards for 28 products: bricks, ghee, edible oil, laundry soap, matches, cigarette, dry ginger, flour, tobacco, poultry and animal feed, lacopodium powder, cardamom, woolen carpets, toilet soap, construction and agricultural lime test codes for rice and paddy, ordinary ink, bread, beer, pasteurized milk, milk bottles, bonemeal, handmade paper, vegetable ghee, and PVC cable. The effective functioning of the Bureau will be of particular importance in promoting manufactured exports. The Bureau needs to be strengthened, through the provision of specialized training and laboratory equipment.

The Department of Commerce is responsible for the provision of licenses, importing of machinery, equipment and raw materials to industries on the basis of recommendations from the Department of Industries and the Department of Cottage and Village Industries. It also allots quotas of restricted raw materials to be imported from India. The procedure for such licenses and allotments is considered cumbersome and time-consuming and needs improvement.

The Trade Promotion Centre (TPC) provides information on export market opportunities. It has been mostly occupied with traditional export items. Lately it has attempted studies on export market possibilities for certain products identified by it. TPC can be immensely useful in promoting export-oriented industries in the country and towards this effort TPC and the Industrial Services Centre need to work together and complement each other's activities. It may be desirable to expose the personnel of ISC and TPC to export market requirements and link them to relevant outside institutions for exchange of information on export opportunities.

The Department of Mines and Geology disseminates information on mineral resource endowment of the country and their exploitation possibilities. Mining activity needs to be approved by the Department. Similar permission is needed from Department of Forests for utilization of forest resources.

(d) Credit financing and guarantee

The Nepal Industrial Development Corporation (NIDC) is engaged in loan financing to small, medium and large industries (see Table B.2). The Corporation does not ask for additional collateral but requires a feasibility

Table B.2 Project-wise distribution of finance to manufacturing industry by the Nepal Industrial Development Corporation as of 16 July 1982

Kind of activity	No. of projects	NIDC finance '000 NRs			
		Loan	Equity share	Gurantee loan	Total
Agro-based industries					
Maida (flour mills	6	28,618	-	-	28,618
Livestock and dairy products	3	18,008	6,712	-	24,720
Breweries	2	19,541	1,350	-	20,891
Vegetable ghee	1	-	-	19,965	19,965
Textile and wooden goods	15	17,129	1,299	1,418	19,846
Rice mills	43	19,422	-	400	19,822
Biscuits and confectioneries	3	17,578	-	200	17,778
Sugar mills	5	12,082	-	600	12,682
Leather processing	1	9,173	2,000	-	11,173
Noodles	1	4,333	-	-	4,333
Soft drinks	1	4,204	-	-	4,204
Footwear production	2	575	1,700	-	2,215
Animal feed plants	2	844	-	28	872
Ginger processing	1	828	-	-	828
Strawboard mill	1	760	-	-	760
Total agro-based industries		166,352	13,061	22,710	202,123
Forest-based industries					
Sal seed oil plant	1	4,505	-	-	4,505
Saw mills and furniture plant	13	2,395	1,524	220	4,139
Catecheu	3	3,274	-	-	3,274
Plywood	1	-	2,000	-	2,000
Matches	3	439	-	581	1,020
Card board	1	514	-	-	514
Pharmaceutical	1	317	-	-	317
Churi ghee	1	-	150	-	150
Total forest-based industries		11,499	3,674	801	15,974
Mineral-based industries					
Cement	2	21,750	13,650	-	35,424
Metal	6	2,984	2,921	-	5,905
Marble	1	3,446	-	-	3,446
Bricks and tiles	4	1,879	-	-	1,879
Glass	1	1,569	-	-	1,569
Stone and stone chips	11	892	-	24	916
Talcum powder	1	410	-	-	410
Agro-lime	1	-	200	-	200
Hume pipe	1	95	-	-	95
Total mineral-based industries		33,049	16,771	24	49,844
Other industris					
Power and electrical goods	7	6,813	2,027	-	8,840
Mechanical workshops	16	4,123	200	-	4,323
Printing	6	3,786	250	-	4,036
Cold storage	4	2,256	600	-	2,856
Soap	2	1,787	-	-	1,787
Oxygen	1	1,521	-	-	1,521
PVC pipe	1	991	-	-	991
Gas	1	941	-	-	941
Pesticides	1	907	-	-	907
Ice	5	874	-	-	874
Methol	1	831	-	-	831
Aluminium utensils	2	771	-	-	771
Drug	1	700	-	-	700
Packaging	1	265	-	-	265
Synthetic goods	1	257	-	-	257
Paper	1	59	-	-	59
Paper bags	1	49	-	-	49

Source: NIDC, Kathmandu.

study report to appraise the viability of the proposed industry. There are sometimes complaints that NIDC takes a long time, mostly up to 120 days, for appraising feasibility reports even if they are prepared by the government-owned Industrial Services Centre. The complaints point to NIDC needing to make its requirements better known to the ISC and the latter incorporating all these details to facilitate NIDC's appraisal. NIDC does not finance working capital.

For assistance in mobilizing funds for industrial investment and to serve as an organized channel for the marketing of shares, bonds and debentures issued by the industrial enterprises, HMG/N and other organizations, a Securities Marketing Centre has been established.

The Credit Guarantee Corporation has been established to guarantee loans to industries, although currently its activities have been mainly confined to priority sector projects of the commercial banks.

The country's commercial banks, namely the Nepal Bank Limited and the Rastriya Banijya Bank, provide loans to finance fixed assets and working capital to cottage industries. The Agricultural Development Bank also extends loans to such agro-based industries. These banks in general require additional collateral, preferably in the form of land, besides the assets of the project. But, collateral requirements have been waived as a test case in the nine districts of the Bagmati and Gandaki Zone where the above-mentioned special Cottage and Small Industry Programme is being carried out with the assistance of the World Bank. Given that cottage industries mostly exist in the form of traditional and informal activity conducted by poor rural households, the test case may merit extension other parts of the country.

Annex C

A FEW MACROECONOMIC ARGUMENTS ON THE DEVELOPMENT OF TOURISM[1/]

As indicated in the main study the industrial development of Nepal may be seriously constrained by the limited size of the domestic market as well as by an insufficient inflow of foreign exchange. An expansion of tourism will help to alleviate both of these constraints, and the present macroeconomic illustration of the impact of increased tourism should be seen in this light.

Consequently this appendix does not deal with the measures which may be taken to promote tourism or with the problems that this might create, except in a very superficial way. Since it is not an exposition of the tourism sector per se, but rather a discussion of the potentials of tourism for alleviating in some measures the constraints mentioned above, the number used are only rough magnitudes, and the calculations are only meant as numerical illustration.

(a) The present picture

After a relatively rapid rate of increase in preceding years the number of tourists has stagnated since about 1978 at about 160,000 arrivals a year with an average stay of some 12 days. Some sources quote slightly more arrivals and a slightly shorter stay. Their total expenditure in Nepal is in the order of NRs. 500 million equivalent to some US $35 million. Total exports of goods and services approximate NRs. 3,000 million, thus about 17 per cent of foreign exchange earnings are derived from tourism, which is more than from any other single item in the balance of payments. Furthermore, receipts from tourism are approximately equal to total value added in the manufacturing sector. While the number of tourists has stagnated, the number of hotel beds has increased by almost 40 per cent over the last 5 years.

1/ This annex has been prepared by the Senior Adviser to the study project, Professor Karsten Laursen.

From the above information it appears, not surprisingly perhaps, that on the average tourists in Nepal are on a tight budget. Thus their average spending is only about NRs. 250 per day, that is less than US $20. This may in part be explained by the fact that some 25 per cent of the tourists are Indian, and by the fact that an unknown fraction of the rest are young people from the west travelling on a "shoestring".

On the assumption that tourist arrivals are evenly distributed over the year, it appears further that on any given day there will be about 4,000 tourists in Nepal or about 0.025 per cent of the total population of the country. Although there is some concentration of tourists arrivals in the spring and in the autumn, it should be safe to say that at no time are there tourists in such quantities that they could have much a detrimental impact on any thing such as the natural environment and other values that the Nepalese people would want to preserve. On the other hand this conclusion of course depends on their geographical concentration and their actual concentration in time. Some may feel that even now tourists are a nuisance on some days in, for instance, the Durbar Squares of the Kathmandu Valley.

(b) Expanding tourism

It is sometimes argued that tourism will not be able to influence the balance of payments situation in any substantial way because of its low base.[1/] As appears from the numerical illustrations below, we do not necessarily share this view, and moreover we believe that it could have a substantial impact on economic growth and development. Furthermore, because of Nepal's unique scenery and cultural it would have an obvious comparative advantage in precisely tourism. Since tourism is normally airbonre, this comparative advantage is even strengthened by the land-locked position of the country (assuming of course that the sky is open which at present it is not). Let us assert to begin with that the number of tourists may be increased by 200,000, that is more than double, and see what it implies. Let us assume further that these tourists have spending hapits corresponding to those of a UNIDO consultant staying within his per diem, that is about US $50 per day.

1/ See, for instance, para. 1.66 of Volume 1 "Development Prospects and Foreign Assistance Required for the 1980's" prepared by HMG/N in February 1981 for the UN Conference on LDCs in Paris in September that year.

Let us finnaly assume that they stay for 10 days on the average. As compared to the present situation the impact would be as follows:

(i) The receipts from tourism would go up from US $35 million by US $100 million a year;

(ii) Assuming, somewhat pessimistically, that the import content of tourism is 50 per cent, and that the savings ratio of the economy is 0.1, then total GDP would increase by about US $170 million.1/ This means that per capita income would increase by about US $12, that is by almost 10 per cent;

(iii) On the same assumption the balance of payments on current account would improve by some US $17 million, corresponding to about half of the present deficit;2/

(iv) Assuming that the productivity of the workers employed in the tourist sector and through the multiplier process is equal to that of the workers already employed, employment would increase by about 10 per cent;

(v) Assuming again an even distribution over the year of tourist arrivals, there would be about 5,000 tourists in the country on any given day over and about the 4,000 who are presently there. At present there are about 6,000 hotel beds corresponding to a capacity utilization of 2/3. Thus, assuming the same capacity utilization, an extra 7,500 hotel beds would be required. According to some sources the present capacity utilization is even much lower with tourists spending only an average of 2.6 days in a hotel;

(vi) It would appear also that even under this scenario the tourist population at any given day would constitute less than 0.07 per cent of the Nepalese population. In some tourist spots abroad the population more than doubles during the tourist season:

(vii) Finally bringing in 200,000 people a year would mean some 500 every day. Even above present arrivals this number could probably be handled largely by existing airport facilities.

(c) Conclusions

As mentioned earlier the above calculations are only numerical illustrations. Anybody can divide or multiply the numbers according to his or her notion of the feasibility of drastically increasing the tourist sector of the Nepalese economy. Also the illustration is comparative static, meaning that nothing has been said about the time required to implement such a

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1/ The simple multiplier is $1/(s + m) = 1.7$

2/ The simple multiplier is $s/(s + m) = 0.17$

programme. Interviews with relevant authorities seem to suggest that over time Nepal could easily absorb a doubling of the present influx of tourists and perhaps much more.

Given the country's comparative advantage in tourist attractions and in unskilled but flexible manpower it might be worth considering a much more aggressive tourist compaign, particularly in the OECD-countries than that which is presently being launched. This view is reinforced by the fact that an upswing is now underway is these countries, although the recent French restrictions on tourist travel are of course a serious setback.

It is beyond the scope of the present annex to try to suggest approximate measures to expand tourism. One might, however, refer to the use of an especially devalued tourist currency which has been successful in other countries.

Tourism seems to have the characteristics of a "crash sector", that is of being an "engine" of economic development in the rest of the economy. By this conclusion it is not of course implied that the rest of the economy should be ingnored. What is implied, however, is a certain shift of emphasis away from the previous supply-oriented type of planning. Such a shift of course assumes relatively high supply elastticities in the longer run, but at least within the limits of the above numbers this seems to be a reasonable assumption.

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